Ethernet PrintSir

User’s Manual

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Part I
General Description

Introduction

Thanks for purchasing an Ethernet PrintSir! The PrintSir makes your printers become sharing device on the network and gives you Local Area Network printing flexibility and manageability ~~at~~ a low cost, and with an absolute minimum of setup and maintenance required.

There are two models in the PrintSir series. The first model only supports NetWare IPX/SPX/NDS protocols. It can operate on the NetWare networks in either print server mode or remote printer mode. The other model supports not only NetWare IPX/SPX/NDS protocols but also TCP/IP protocols. It can operate on the NetWare networks, it can service the LPR printing jobs on Unix and Windows 95/98, Windows NT networks as well.

This User's Manual introduces the PrintSir, explains how to install it on your network, and how to set up your Novell NetWare server and its client workstations, as well as TCP/IP networks, Unix hosts and Windows workstations, to connect to and print using the PrintSir.

Print Server Technology

Before networked personal computers became common, printers could only be connected directly to the workstations they served. This made it inconvenient to share printers between users; files had to be transferred to disk and printed from the printer's host or a many-to-one switch and several printer cables could be used.

Network operating systems, along with their file sharing capability, also provide the ability to share printers. As the use of network systems became more and more prevalent, it became possible for printers to be a resource that was conveniently shared by groups of network users. The printer could be shared more efficiently because:

- Users no longer had to manually copy files or change switch settings each time they needed to print.
- Print servers take print jobs and store them in print queues before printing, so that

- Users can print documents and then continue working while the printing is going on, rather than having to wait for the printing to complete.
- More than one user can begin printing at the same time, without having to be aware of who else is printing.
- Support staff can monitor the status of the printer remotely, and easily notice if there are any problems.

For traditional print servers, the printer remained attached to a computer, either to a workstation or to a dedicated network server. In a peer-to-peer network operating system, printers are attached to workstations, and the operating system "advertises" the printer as a network resource to the other peers on the network, as well as making it directly available to the local user. Each shared printer has its own printer queue, stored on the station to which the printer is attached.

In a server-based operating system, the print queues are stored centrally on the servers, making central management more convenient. Printers can be connected directly to the server itself, or to workstations. The network client software of a workstation-based print server, in addition to allowing the user to take advantage of file services, also monitors a print queue on the server and directs print jobs from the print queue to the local printer.

There are disadvantages to both of these methods. Connecting the printer to the file server places an additional drain on its resources, and may require running a long, bulky printer cable from the server to where the printer is located. If a workstation-based remote print server is used, then

- The remote server workstation's software configuration becomes more complex,
- Additional time and memory are consumed by the remote printer software,
- The user of the workstation to which the printer is connected may be inconvenienced by not being able to turn the workstation off, not being able to run programs incompatible with the remote printer software, etc.

Dedicated network print servers solve many of these problems. No additional printer software is necessary on any workstations, and the server load is decreased.

Feature Summary

- Novell NetWare compatible using the IPX/SPX and NDS network protocols.
- Supports both NetWare print server and remote printer printing modes. If your PrintSir did not support remote printer mode, please ask your dealer for free upgrade.
- UNIX and Windows 95/98, Windows NT compatible using the TCP/IP network protocols.
- Supports DHCP (both client and server) protocol for automatic IP addresses assignment.
- Provides the network print driver for Windows 95/98.
- Provides the configuration tool for Windows 95/98 and Windows NT.
- Efficient parallel interface using DMA (Direct Memory Access) transfer.
- Remotely manageable.
- Flash memory for convenient software upgrades.
- Easy-to-use installation, setup and diagnostics program.
- Supports Novell NetWare PCONSOLE commands.

Part II
Using the PrintSir with Novell Networks

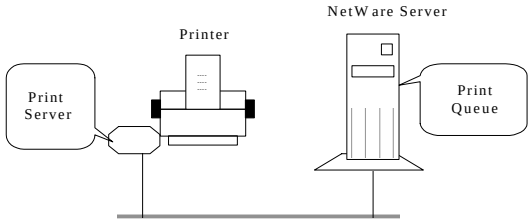
The Embedded NetWare Printer Applications

We implement NetWare remote-printing functionality into the PrintSir itself, thus allowing two or more printers attached by a PrintSir to be connected to the network. We have developed the PrintSir to support both NetWare print server and remote printer functions:

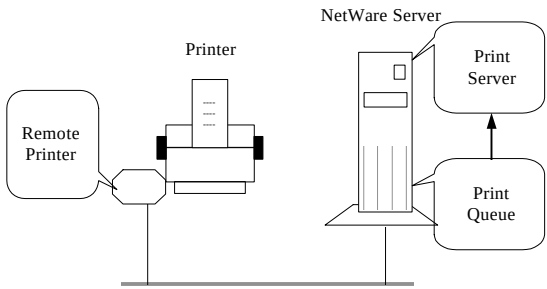
- Embedded print server, which emulates the queue management functionality of NetWare print server, PSERVER program running on the NetWare server. A user first prints a job at a workstation, the job is routed to a NetWare server, the NetWare server stores the job in a print queue, then the print server gets the print job from the queue to printers.
- Embedded remote printer, which allows a printer to function identically to a DOS workstation running NPRINTER.EXE program, but without the DOS workstation. A user first prints a job at a workstation, the job is routed to a NetWare server, the NetWare server stores the job in a print queue, then the print server moves the print job from the queue to the remote printer then to the printer.

Compare with NetWare printing functionality, the advantages of embedding the NetWare network printing functionality in the PrintSir include:

- Installation is easier and quicker.
- Network management is easier.
- Printing performance is enhanced.
- Relieve NetWare file server's burden.
- Relieve the need of a workstation running the remote printer utility.
- Improve productivity by locating the printer near the workgroup.



Embedded Print Server



Embedded Remote Printer

The Ethernet PrintSir can operate either in print server mode or in remote printer mode. Each print server should log into a NetWare server before servicing the print jobs. Each print server will occupy a user account with which it can log into the NetWare server. A remote printer will not log into a NetWare server; it will connect to a print server and get the print jobs from the print

server. A remote printer does not occupy any user account. A NetWare print server can control many remote printers; thus a print server account can be shared to many remote printers as your requirement. But the printing performance of a remote printer will be slower than a print server's, because a remote printer does not get a print job directly from the print queue, it gets a print job from the print server. Summarize the comparison between a print server and a remote printer as follows:

The Advantage of a Print Server

- Easy configuration.
- Better printing performance.

The Advantage of a Remote Printer

- Save user licenses.

NOTE*: This remote printer feature is not available for the 10/100Mbps 3-port PrintSir models.*

Using the PrintSir with NetWare 3.x Networks

Once your PrintSir is connected to your Ethernet network, you can set it up for use with your networking software. There are three methods you can use to do this easily:

1. On DOS environment, use the INSTALL quick-installation program found on the diskette included with the PrintSir.
2. On DOS environment, use the PSETUP configuration program found on the included diskette, configure the PrintSir to use a particular file server. Then, use NetWare's PCONSOLE program to create a NetWare print server and print queue with the appropriate names.
3. On Windows 95/98 or NT environment, use the *PrintSir Configuration for Windows 95/98/NT* program found on the included diskette to configure the PrintSir. For instructions for using this program, refer to the chapter, ***Using PrintSir Configuration for Windows 95/98/NT*** on page 85.

For instructions for using the PrintSir with a NetWare 4.x network, see the next chapter, ***Using the PrintSir with NetWare 4.x Networks*** on page 19.

NetWare 3.x Quick Installation

The INSTALL program included on the enclosed software diskette can be used to quickly set up the PrintSir for use. It can only be used to set up the PrintSir as Server mode; it cannot be used to configure the PrintSir as Remote Printer mode. It handles both changing the PrintSir's internal settings, the creation of NetWare print server and print queue objects on the file server, and the assignment of the print server to the queue. Unless you need to configure the NetWare settings to conform to special requirements for your network, you can use the quick installation method.

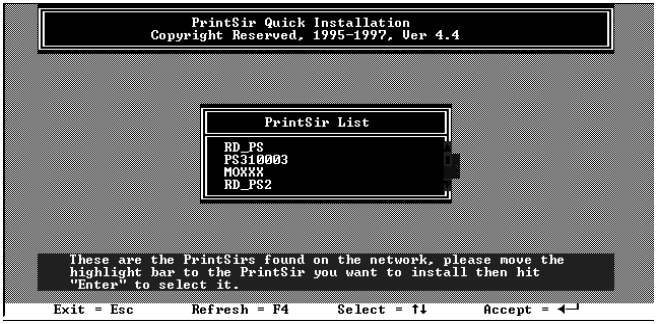
To use this method,

1. Log in to your NetWare server as SUPERVISOR.

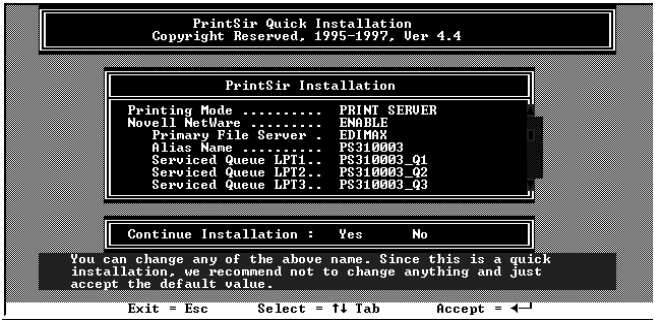
2. Insert the floppy disk included with the PrintSir, and change to the appropriate drive (A: or B:). Please make sure the diskette is writable, or copy all of the files on the diskette to a sub-directory on your hard disk drive before starting the installation.

3. Run the INSTALL program

4. Select your new PrintSir from the displayed list and press *Enter*. The name listed will be the same as the Device Name printed on a label on your PrintSir.


PrintSir Quick Installation
Copyright Reserved, 1995-1997, Ver 4.4
PrintSir List
RD_PS
PS310003
MOXXX
RD_PS2
These are the PrintSirs found on the network, please move the highlight bar to the PrintSir you want to install then hit "Enter" to select it.
Exit = Esc
Refresh = F4
Select = ↑↓
Accept = ←┘

5. A list of defaults will be displayed. If you need to change any of these items, use the arrow keys to choose the item you need to change, then press *Enter* to display a list of choices. When all of


PrintSir Quick Installation
Copyright Reserved, 1995-1997, Ver 4.4
PrintSir Installation
Printing Mode ..... PRINT SERVER
Novell NetWare ..... ENABLE
Primary File Server . EDIMAX
Alias Name PS310003
Serviced Queue LPT1.. PS310003_Q1
Serviced Queue LPT2.. PS310003_Q2
Serviced Queue LPT3.. PS310003_Q3
Continue Installation : Yes No
You can change any of the above name. Since this is a quick installation, we recommend not to change anything and just accept the default value.
Exit = Esc
Select = ↑↓ Tab
Accept = ←┘

the values are correct, select the *Continue Installation* item and press *Enter*.

6. The quick installation program will set up the PrintSir, and when the setup is complete, it will also create a file called PRINTSIR.BAT that you can run after logging in to the file server to redirect print commands to the new PrintSir. A sample PRINTSIR.BAT file is shown below:

```
capture /S=III /Q=PRINTSIR_Q1 /nt /nff
/nb /l=1 /ti=10
```

   This redirects the LPT1 port (`/l=1`) to the print queue `PRINTSIR_Q1` on the file server named `III`. No banner page will be printed (`/nb`), no form feed (blank page) will be added to the end of the job (`/nff`), and tabs will not be expanded into spaces (`/nt`). If the program does not explicitly signal end-of-job, the capture facility will wait 10 seconds (`/ti=10`) before assuming that the print job is complete.

7. Reset the PrintSir to have the changes take effect.

Before printing, you may want to verify that the setup was complete. Using the *PrintSir Status* option of the PSETUP command (as described in the ***Get PrintSir Status*** section on page 82), you can verify that the PrintSir is connected to the right file server, is using the correct network frame type, and so on.

You may also want to use the NetWare PCONSOLE program to verify that:

- A NetWare print server and one, two or three print queue(s) have been created on the file server. The number of print queues created is equal to the number of printer port of your PrintSir.
- Printer 0 (or Printer 1, Printer 2) on the print server is serving the new print queue(s).
- The print queue(s) and print server have the right permissions and notification settings.

For more detailed information, consult your NetWare manual.

NetWare 3.x Installation Using PSETUP

Configuring as Print Server Mode

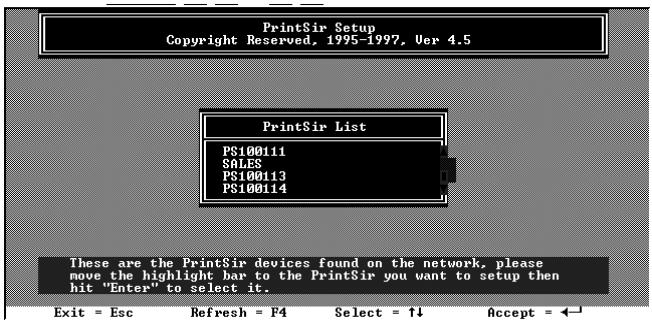
For more complex setup needs, you can use the PSETUP program in conjunction with the NetWare PCONSOLE program.

The installation procedure is as follows:

1. From a workstation, log in to your NetWare server as SUPERVISOR.

2. Run the PSETUP program included on the Software disk.

3. Select your new PrintSir from the list provided.


PrintSir Setup
Copyright Reserved, 1995-1997, Ver 4.5
PrintSir List
PS100111
SALES
PS100113
PS100114
These are the PrintSir devices found on the network, please move the highlight bar to the PrintSir you want to setup then hit "Enter" to select it.
Exit = Esc
Refresh = F4
Select = ↑↓
Accept = ←┘

4. Choose *NetWare Configuration* from the menu.

PrintSir Setup
Copyright Reserved, 1995-1997, Ver 4.4
PrintSir PS100115 Configuration
Printing mode ..... Print server
Alias name PS100115
NDS tree .....
NDS context .....
Primary file server ... RD_SERVER
Polling interval 2
Diagnostic printout ... DISABLE
This is to allow the PrintSir to operate in either NetWare print server or remote printer mode. If you are not familiar with remote printer, we suggest you use the default "print server" mode.
Exit = Esc
Select = ↑↓
Edit = ←┘

5. Select *Print server* in the *Printing mode* field.

6. Change the *Alias name* if you want.

7. Set the *Primary File Server* to be the file server where the PrintSir's queue will be located.

8. Press *Escape* to exit the PrintSir Configuration screen, confirm that the changes should be saved, and exit PSETUP.

At this point the PrintSir setup is complete, and you can begin setting up the NetWare print server and print queue objects:

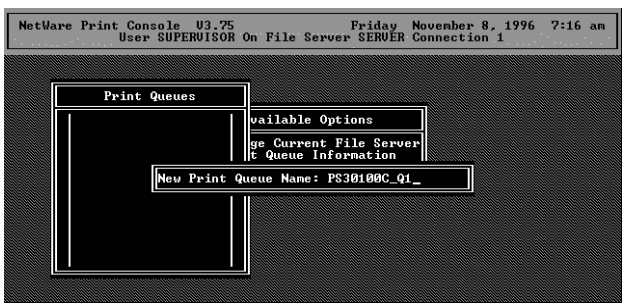
9. Run the NetWare PCONSOLE program.

10. Change the current file server, if necessary, using the *Change Current File Server* menu selection.

11. Choose the *Print Queue Information* menu selection.

12. Press the *Insert* key to add a new print queue.

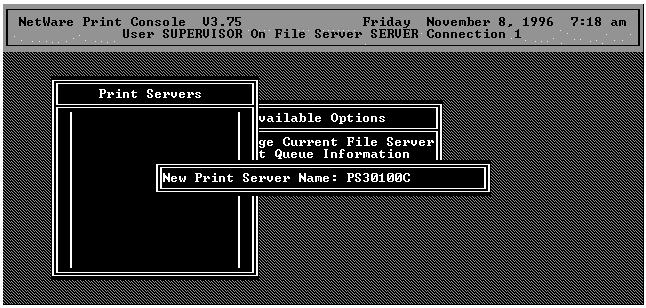
13. Type in a print queue name, such as "PQ" or "Q1".


NetWare Print Console V3.75
Friday November 8, 1996 7:16 am
User SUPERVISOR On File Server SERVER Connection 1
Print Queues
vailable Options
ge Current File Server
t Queue Information
New Print Queue Name: PS30100C_Q1_

14. You have now successfully created the print queue that your PrintSir will serve. Press the *Escape* key until the *Available Options* main menu is displayed.

15. Select *Print Server Information*.

16. Press the *Insert* key to add a new NetWare print server object. The print server name can be identical to the PS*xxxxxx* name printed on the label of the PrintSir, or you can use an alias name you have assigned using PSETUP.

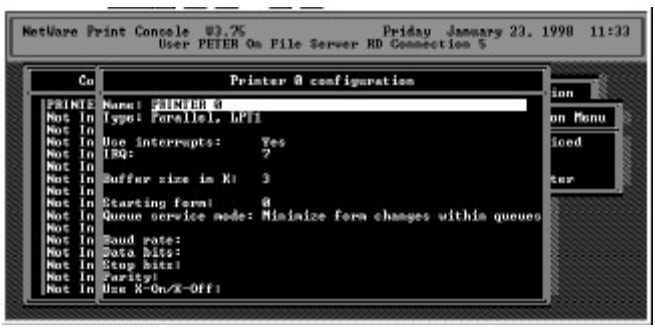

NetWare Print Console V3.75 Friday November 8, 1996 7:18 am
User SUPERVISOR On File Server SERVER Connection 1
Print Servers
vailable Options
ge Current File Server
t Queue Information
New Print Server Name: PS30100C

17. Press *Enter* to select the newly created print server.

18. Select *Print Server Configuration.*

19. Select *Printer Configuration.*

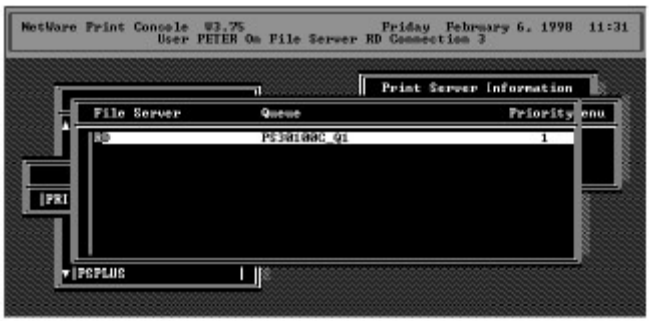
20. Select *Printer 0 (or Printer 1, Printer 2)*, and press *Enter*, then select *Parallel LPT1 (or LPT2, LPT3)* in the *Type* field. If your PrintSir is with only one port, you do not need to configure this *Type* field.



21. Press *Escape*, and answer *Yes* to the *Save Changes* question.

22. Select *Queues Serviced by Printer*, then select *Printer 0 (or Printer 1, Printer 2)* and press *Enter*.

23. Press *Insert* and add your newly created print queue to the list of queues serviced by the printer. Enter a priority number for the queue service, or press *Enter* to accept the default.



24. Repeatedly press *Escape* to exit the PCONSOLE program.

25. Reset the PrintSir to have the changes take effect.

NOTE: *If the PrintSir you have is with multiple printer connectors, you may create multiple print queues and printer objects.*

Your PrintSir should now be ready to use. You should be able to redirect printing to your PrintSir using a CAPTURE command such as the one shown on page 11.

Configuring as Remote Printer Mode

This remote printer feature is not available for the 10/100Mbps 3-port PrintSir models. Make sure that you have created the NetWare print server with Type Remote using PCONSOLE utility before you configure the PrintSir. For more detailed information about PCONSOLE, please refer to NetWare's manual. You can set up the NetWare print server and print queue objects by following the steps below:

1. Run the NetWare PCONSOLE program.

2. Change the current file server, if necessary, using the *Change Current File Server* menu selection.

3. Choose the *Print Queue Information* menu selection.

4. Press the *Insert* key to add a new print queue.

5. Type in a print queue name, such as "PQ" or "Q1".

6. You have now successfully created the print queue that your NetWare print server will serve. Press the *Escape* key until the *Available Options* main menu is displayed.

7. Select *Print Server Information.*

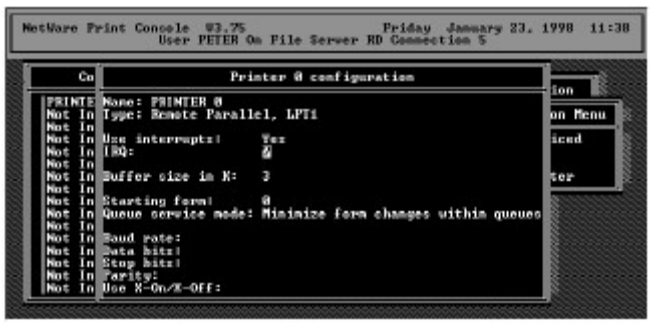
8. Press the *Insert* key to add a new NetWare print server.

9. Press *Enter* to select the newly created print server.

10. Select *Print Server Configuration.*

11. Select *Printer Configuration.*

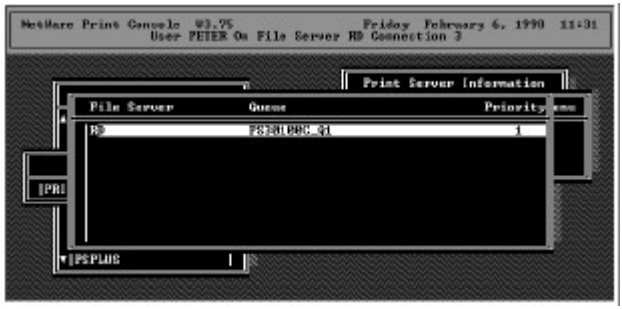
12. Select *Printer 0 (or Printer 1, Printer 2)*, press *Enter*, and then select *Remote Parallel* in the *Type* field.



13. Press *Escape*, and answer *Yes* to the *Save Changes* question.

14. Select *Queues Serviced by Printer*, then select *Printer 0* and press *Enter*.

15. Press *Insert* and add your newly created print queue to the list of queues serviced by the printer. Enter a priority number for the queue service, or press *Enter* to accept the default.



16. Repeatedly press *Escape* to exit the PCONSOLE program.

You must load NetWare print server so that the PrintSir configured as a remote printer can connect to that print server and service the print jobs. To load the NetWare print server, type *"`LOAD PSERVER.NLM PrintServer`"* command at the system console of the NetWare file server, where `PrintServer` is the print server name newly created by the PCONSOLE program.

To configure the PrintSir as a NetWare remote printer, perform the following steps:

1. From a workstation, log in to your NetWare server as SUPERVISOR.
2. Run the PSETUP program included on the Software disk.
3. Select your new PrintSir from the list provided.

4. Choose *NetWare Configuration* from the menu.

5. Select *Remote Printer* in the *Printing mode* field.

PrintSir Setup
Copyright Reserved, 1995-1997, Ver 4.5
PrintSir PS100116 Configuration
Printing mode ..... Remote printer
NetWare print server ... PRINT_SERVER
Printer number 000
PrintSir Status
PrintSir Utilities
This is the NetWare print server which the PrintSir will connect to.
Exit = Esc
Select = ↑↓
Edit = ↵

6. Type the print server's name in the *Print server* field. The print server will be serviced by the PrintSir that is being configured as a remote printer now.

7. Type the printer number assigned in *PCONSOLE* in the *Printer Number* field.

8. Press *Escape* to exit the NetWare Configuration screen, confirm that the changes should be saved, and exit PSETUP.

9. At this point the PrintSir setup is complete.

10. Reset the PrintSir to have the changes take effect.

Using the PrintSir with NetWare 4.x Networks

This chapter tells how to configure your PrintSir for operation with NetWare 4.x file servers and clients using NDS (NetWare Directory Services).

How NetWare 4.x is Different

Novell NetWare version 3.x uses a database called the *bindery* for storing information such as user and group information, server configuration, and information about network services. Each NetWare 3.x file server has its own bindery, which is administrated separately from other file servers using commands such as SYSCON, PCONSOLE, and so on.

NetWare version 4.x improved on the bindery concept by introducing *NDS*, NetWare Directory Services. NDS is a tree-structured directory that is shared by a group of file servers on a network, allowing centralized administration and easy coordination of users, permissions, and resources between servers.

To make it possible for NetWare 4.x servers to coexist with NetWare 3.x servers, NetWare 4.x supports *bindery emulation*, which makes parts of the NDS directory visible to NetWare 3.x clients, just as if the information were stored in a NetWare 3.x bindery. This allows clients to access NetWare 4.x servers without being upgraded to the NetWare 4.x software, and for 3.x and 4.x servers to be mixed on a network.

Your Ethernet PrintSir can operate either in bindery mode or NDS mode. Bindery mode works with NetWare 3.x servers and with NetWare 4.x servers using bindery emulation. NDS mode works with NetWare 4.x servers.

> **NOTE:** *Though the PrintSir supports both bindery mode and NDS mode, it cannot support both at the same time. If you are using both NetWare 3.x and 4.x servers, you need to set up the PrintSir to use bindery mode.*

The mode you use to log in to the server when you set up the PrintSir determines whether it uses bindery mode or NDS mode. When you run the INSTALL program, if you have logged in to a NetWare 3.x server or a NetWare 4.x program using the NETX.EXE client shell, the PrintSir will use bindery mode or bindery emulation mode. If you use VLM.EXE to log into a NetWare 4.x server, the PrintSir will use NetWare Directory Services (NDS).

NetWare 4.x Quick Installation

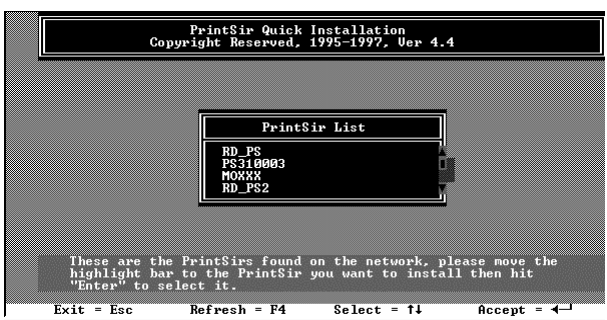
The INSTALL program included on the enclosed software diskette can be used to quickly set up the PrintSir for use. It can only be used to set up the PrintSir as Server mode; it cannot be used to configure the PrintSir as Remote Printer mode. To use this method,

1. Log in to your NetWare server as ADMIN.

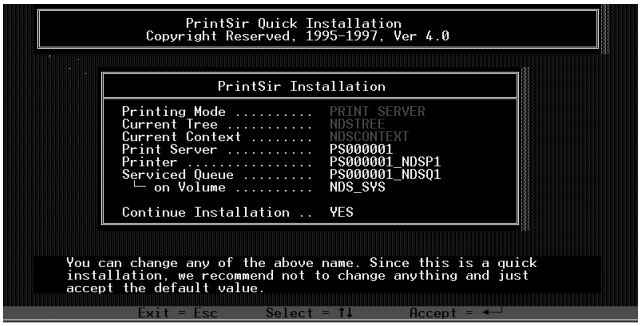
2. Insert the floppy disk and change to the appropriate drive (A: or B:). Please make sure the diskette is writable, or copy all of the files on the diskette to a sub-directory on your hard disk drive before starting the installation.

3. Run the INSTALL program

4. Choose your new PrintSir from the displayed list and press *Enter*. The name listed will be the same as the Device Name printed on a label at the your PrintSir.


PrintSir Quick Installation
Copyright Reserved, 1995-1997, Ver 4.4
PrintSir List
RD_PS
PS310003
MOXXX
RD_PS2
These are the PrintSirs found on the network, please move the highlight bar to the PrintSir you want to install then hit "Enter" to select it.
Exit = Esc
Refresh = F4
Select = ↑↓
Accept = ↵

5. A list of defaults will be displayed. If you need to change any of these items, use the arrow keys to choose the item you need to change, then press *Enter* to display a list of choices. When all of the values are correct, select the *Continue Installation* item and press *Enter*.


PrintSir Quick Installation
Copyright Reserved, 1995-1997, Ver 4.0
PrintSir Installation
Printing Mode ..... PRINT SERVER
Current Tree ..... NDSTREE
Current Context ..... NDSCONTEXT
Print Server PS000001
Printer ..... PS000001_NDSP1
Serviced Queue ..... PS000001_NDSQ1
└ on Volume ..... NDS_SYS
Continue Installation .. YES
You can change any of the above name. Since this is a quick installation, we recommend not to change anything and just accept the default value.
Exit = Esc
Select = ↑↓
Accept = ←┘

The *Current Tree* and *Current Context* settings cannot be changed from within the INSTALL program. If you need to change the tree or context where the PrintSir will be installed, use the CX command to change them before starting INSTALL.

6. The quick installation program will set up the PrintSir, and when the setup is complete, it will also create a file called PRINTSIR.BAT which you can run after logging in to the file server to redirect print commands to the new PrintSir. A sample PRINTSIR.BAT file may be found on page 11.

7. Reset the PrintSir to have the changes take effect.

NOTE: *The PrintSir may require up to a minute after power-up to log into a NetWare Directory Services context because of the large number of calculations NDS security requires.*

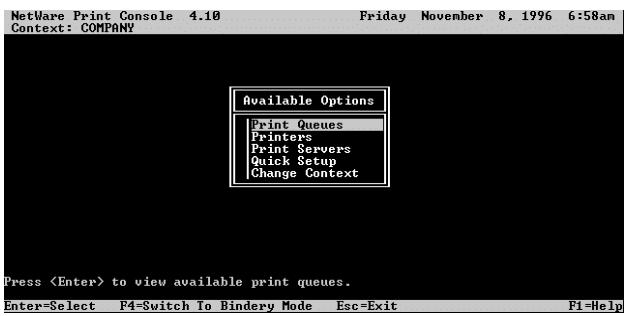
NetWare 4.x Installation Using PSETUP

Configuring as Print Server Mode

For more complex setup needs, you can use the PSETUP program in conjunction with the NetWare PCONSOLE program.

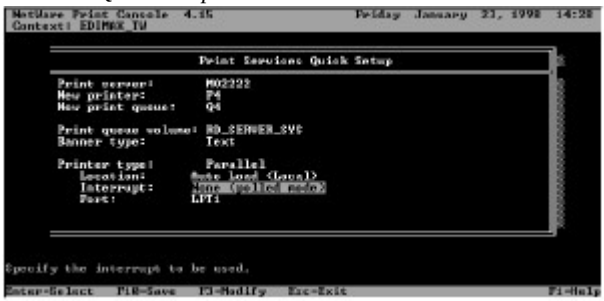
To install the PrintSir using NetWare Directory Services (NDS) mode,

1. Log in to your NetWare server as ADMIN.
2. Run the PSETUP program included on the PrintSir Software disk.
3. Select your new PrintSir from the list provided.
4. Choose *NetWare Configuration* from the menu.
5. Select *Print server* in the *Printing mode* field.
6. Change *Alias name* if you want.
7. Set the NDS tree and NDS context where the PrintSir will be located. Do **NOT** set a Primary file server, as that would force the use of bindery mode.
8. Press *Escape* to exit the PrintSir Configuration screen, confirm that the changes should be saved, and exit PSETUP.
9. Run the NetWare PCONSOLE program.



10. Change the current context, if necessary, using the *Change Context* menu selection.

11. Choose *Quick Setup* from the menu.



12. Enter the PrintSir name (either the PS*xxxxxx* name or an alias name you have assigned) in the Print server field.

13. Assign printer and print queue names.

14. Set the *Banner type* to *PostScript* if you are using a PostScript printer, and to *Text* otherwise.

15. Press *F10* to save the new configuration.

16. Reset the PrintSir to have the changes take effect.

> **NOTE:** The PrintSir may require up to a minute after power-up to log into a NetWare Directory Services context because of the large number of calculations NDS security requires.

Your PrintSir should now be ready for use by workstation users. You should be able to redirect printing to your PrintSir using a CAPTURE command such as the one shown on page 11.

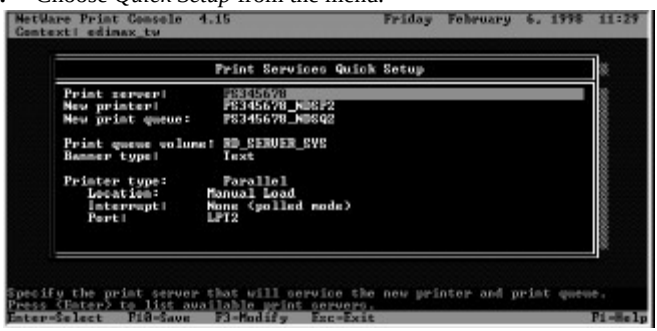
Configuring as Remote Printer Mode

This remote printer feature is not available for the 10/100Mbps 3-port PrintSir models. Make sure that you have created the NetWare print server with Type Remote using PCONSOLE utility before you configure the PrintSir. For more detailed information about PCONSOLE, please refer to NetWare's manual. You can set up the NetWare print server, print queue and printer objects by following the steps below:

1. Run the NetWare *PCONSOLE* program.

2. Change the current context, if necessary, using the *Change Context* menu selection.

3. Choose *Quick Setup* from the menu.



4. Enter the print server name in the Print server field.

5. Assign printer and print queue names.

6. Set the *Banner type* to *PostScript* if you are using a PostScript printer, and to *Text* otherwise.

7. Set the *Location* to *Manual Load*.

8. Press *F10* to save the new configuration and return to the main menu.

9. Choose *Printers* menu.

10. Select your newly created Printer from the *Printers list*.

11. You can view or edit the Printer number from 0 to 255.

12. Save the new configuration and exit *PCONSOLE*.

You must load NetWare print server so that the PrintSir configured as a remote printer can connect to that print server and service the print jobs. To load the NetWare print server, type *"`LOAD PSERVER.NLM PrintServer`"* command at the system console of the NetWare file server, where `PrintServer` is the print server name newly created by the *PCONSOLE* program.

To configure the PrintSir as a NetWare remote printer, perform the following steps:

1. Log in to your NetWare server as ADMIN.

2. Run the *PSETUP* program included on the PrintSir Software disk.

3. Select your new PrintSir from the list provided.

4. Choose *NetWare Configuration* from the menu.

5. Select *Remote Printer* in the *Printing mode* field.

6. Type the print server's name in the *Print server* field. The print server will be serviced by the PrintSir that is being configured as a remote printer now.

7. Type the printer number assigned in *PCONSOLE* in the *Printer Number* field.

8. Press *Escape* to exit the NetWare Configuration screen, confirm that the changes should be saved, and exit *PSETUP*.

9. Reset the PrintSir to have the changes take effect.

Part III
Introduction to TCP/IP Suite

Introduction to TCP/IP Networks

The TCP/IP architecture is a result of protocol research and development conducted on the experimental packet-switched network funded by the Defense Advanced Research Projects Agency (DARPA), and is generally referred to as the TCP/IP protocol suite. The TCP/IP protocols are now the standard of Internet and are used by numerous private and public organizations. These widely used protocols enable communication among computers from various vendors. The TCP/IP suite defines formats and rules for the transmission and receipt of information independent of any given network organization or computer hardware.

The TCP/IP suite consists of a large collection of protocols such as Address Resolution Protocol (ARP), Reverse Address Resolution Protocol (RARP), Internet Protocol (IP), Internet Control Message Protocol (ICMP), Transmission Control Protocol (TCP), User Datagram Protocol (UDP), Bootstrap Protocol (BOOTP), Dynamic Host Configuration Protocol (DHCP). Please refer to your TCP/IP books for more detailed information.

IP Address

Each computer on a TCP/IP network must be assigned a unique 4-byte Internet address, or IP address. When a computer is moved to a different sub-network, the IP address must be changed to reflect the new sub-network. To guarantee the uniqueness of the IP address, you must obtain an official IP address group from the Internet Network Information Center (NIC) if your networks are connected to the public Internet. An IP address is usually represented in dotted-decimal notation-that is, with the decimal value of each octet of the address separated by a period. Below is an example of IP address:

201.66.191.150

Subnet Mask

Although an IP address is a single value, it contains two parts, a constituent network number and a host number on that network. Subnet masks are 32-bit values that allow the recipient of IP packets to distinguish the network number portion of the IP address from the host number. Subnet masks can be used to further segment an assigned network number among several local networks. Sometimes only portions of an octet need to be segmented, using only a few bits to specify subnet number. For example, when the IP address is 168.66.191.150 and the subnet mask is 255.255.255.0, the network number is 168.66.191 and the host number is 150.

Assigning IP Address

You can assign an IP address to a host either manually or automatically. There are several methods to dynamically assign an IP address to a host device:

- DHCP (Dynamic Host Configuration Protocol)
- BOOTP (Bootstrap Protocol)
- RARP (Reverse Address Resolution Protocol)

If you do not know how to set up your TCP/IP networks and you do not want to connect your networks to the Internet; you can simply assign any IP addresses different from each other to the hosts on the network. For examples, assign 10.0.0.1 to host1, 10.0.0.2 to hosts2, etc. Please refer to the related TCP/IP reference books for more detailed information about assigning an IP address.

BOOTP

The BOOTP (Bootstrap Protocol) is an open, industry standard that is designed to reduce the complexity of TCP/IP network administration. BOOTP specifies methods for simplified and dynamic configuration of computers on TCP/IP networks, and reduces the administrative burden of adding, moving, and configuring computers on TCP/IP networks. When a BOOTP client computer is started on a TCP/IP network, it communicates with a BOOTP server to get its TCP/IP

configuration information. The interaction process between a BOOTP client and a BOOTP server is:

1. BOOTP client computer broadcasting a "BOOTP Request" packet on the network when it is started.
2. The BOOTP server receives the request, it selects an available IP address and responds with a "BOOTP Reply" packet to the BOOTP client to offer the IP address and other options.

DHCP

The DHCP (Dynamic Host Configuration Protocol) provides a framework for passing configuration information to hosts on a TCP/IP network. DHCP is based on the Bootstrap protocol (BOOTP), adding the additional configuration options. A DHCP server provides a reliable and flexible alternative to manual TCP/IP configuration. The interaction process between a DHCP client and a DHCP server is:

1. DHCP client computer broadcasting a "DHCP Discover" packet on the network when it is started.
2. The DHCP server receives the request, it selects an available IP address and responds with a "DHCP Offer" packet to the DHCP client to offer the IP address and other options.
3. When a DHCP client receives a "DHCP Offer" packet, it responds by broadcasting a "DHCP Request" packet to confirm the validity of the offered IP address.
4. The DHCP server sends a "DHCP ACK" packet to acknowledge the client's request.

RARP

The RARP (Reverse Address Resolution Protocol) is another method to manage IP addresses. Unlike BOOTP and DHCP provide the framework for configuring several parameters, the RARP can only provide IP address assignment. The interaction process between a RARP client and a RARP server is:

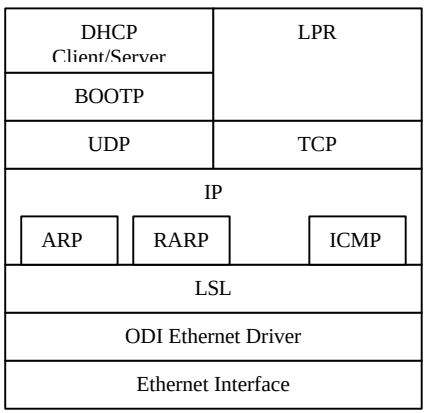
1. RARP client computer broadcasting a "RARP Request" packet on the network when it is started.

2. The RARP server receives the request, it searches its address store, selects an available IP address and responds with a "RARP Reply" packet to the RARP client to offer the IP address.

PrintSir's TCP/IP Implementation

PrintSir's TCP/IP Architecture

The PrintSir is available with support for TCP/IP protocols. The PrintSir is implemented complete required TCP/IP protocols for network printing, which includes ARP, RARP, IP, ICMP, UDP, TCP, LPR, BOOTP and DHCP Client and Server protocols. The TCP/IP architecture of PrintSir is shown as below:



Configuring IP Address

To assign an IP address to a PrintSir manually, you can use the utilities provided with the PrintSir, INSTALL program on DOS, PSETUP program on DOS, and PrintSir Configuration for ***Windows 95/98***/NT. Please refer to the latter chapters for the usage of those utilities. It is highly recommended to have the PrintSir get its IP address automatically if your network is not complicated. The PrintSir supports the most three popular methods to get its own IP address:

DHCP, BOOTP and RARP protocols. The PrintSir will use these three methods to obtain its IP address automatically if its IP address is configured as Auto (0.0.0.0).

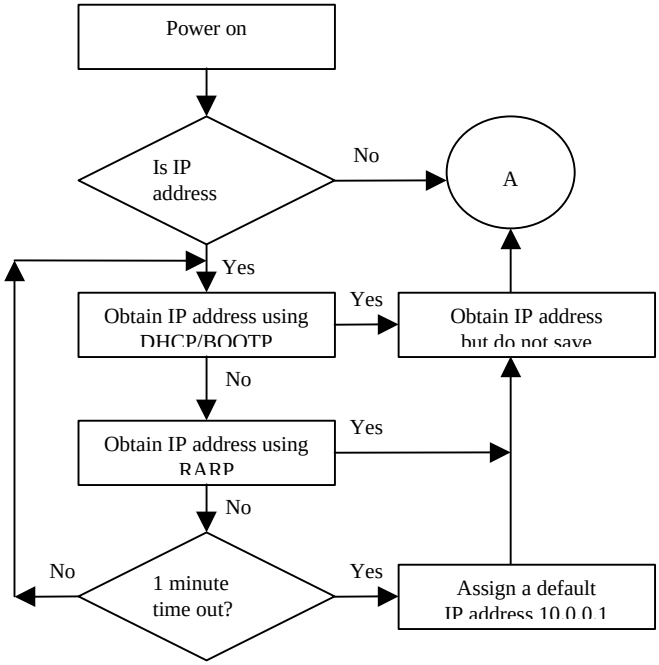
DHCP Server Implementation

To ease the IP address configuration, the PrintSir supports DHCP server function as well. You can configure a PrintSir as DHCP server to provide the dynamic IP address assignment on the network. However, it is highly recommended to choose an NT server as DHCP server if there is any NT server on the network. The DHCP server implementation of PrintSir is simple and only with limited functions. The PrintSir that is configured as a DHCP server is most suitable for a small network, it provides only one IP address pool for assigning to its clients, and it provides few configuration options: IP address, default gateway, subnet mask and DNS (Domain Name System) server. You can enable or disable the DHCP server function as required, or if you are not sure whether to enable or disable this DHCP server function, just configure this function as AUTO. The PrintSir will automatically detect if there is any DHCP server on the network when it boots up. If there is a DHCP server on the network then the PrintSir will disable this function itself; otherwise it will enable this function. The following flowchart describes how the PrintSir obtains the IP address for itself and how the PrintSir decides whether enable or disable its DHCP server function.

Configuring DHCP Server

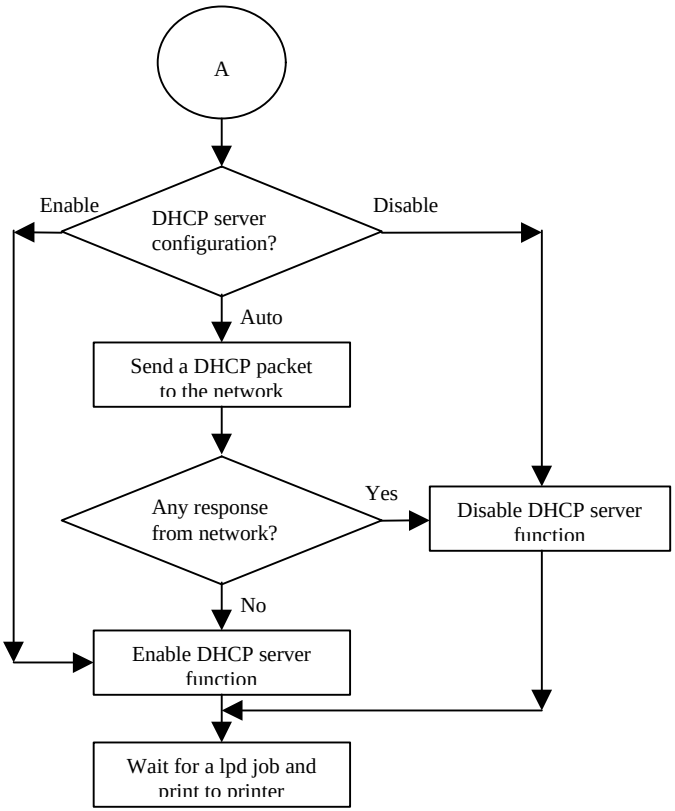
You can use the PrintSir as a DHCP server to automatically and dynamically assign TCP/IP configuration parameters to computers that start on the network. The PrintSir also provides a menu-driven tool on DOS and a graphical administrative tool on Windows 95/98/NT that allow you to define DHCP database for managing assignment of client IP addresses and other optional TCP/IP configuration parameters. TCP/IP configuration parameters that can be dynamically assigned by the PrintSir include:

- IP addresses for each computer on the network.



- Subnet mask that identifies the portions of network and host number.
- Gateway (router) that connects the subnet to other network.
- DNS server that can resolve the host name to IP address.

To configure the PrintSir as DHCP server, you can use *PSETUP.EXE* program on DOS or *PrintSir Configuration for Windows 95/98/NT* program on *Windows 95/98* or NT.



Using PSETUP.EXE Program

To configure your PrintSir using PSETUP.EXE program, you will need to have a PC-compatible workstation with a network card and IPX network drivers.

To configure the PrintSir itself:

1. Insert the floppy disk included with the PrintSir and change to the appropriate drive (A: or B), or copy the contents to your hard disk.
2. Run the PSETUP.EXE program by entering "`PSETUP -U`".
3. Choose your PrintSir from the displayed list, and press *Enter*. The displayed name should correspond to the name printed on the PrintSir, provided you have not assigned it an alias name.
4. Choose *TCP/IP Configuration* to change the TCP/IP configuration settings as appropriate. The available settings are:
   - TCP/IP Support: determines whether or not TCP/IP network printing is supported. You should set this to ENABLE.
   - IP Address: gives the IP address where the PrintSir is to be located.
   - DHCP server: determines whether or not enable the DHCP server function.
   - Starting IP: specifies the starting IP address for assigning to DHCP clients.
   - IP range: specifies how many IP addresses are available to DHCP clients.
   - Gateway IP: gives the IP address of the default gateway.
   - Netmask: gives the network mask.
   - Name server: gives the IP address of the domain name server.

   To change a setting, move the cursor to the appropriate line and press *Enter*.
5. Press *Escape* and choose *Yes* in *Save Change* menu. The new settings will be saved to the PrintSir.
6. Reset the PrintSir to have the changes take effect.

Using PrintSir Configuration for Windows 95/98/*NT Program*

To configure your PrintSir using *PrintSir Configuration for Windows 95/98/NT* program, You must load either *IPX/SPX* or *TCP/IP network protocol* on the *Windows 95/98* or NT workstations before running *PrintSir Configuration for Windows 95/98/NT* program. Double click the icon of PrintSir Configuration in PrintSir Utility program folder to run the *PrintSir Configuration for Windows 95/98/NT* program and select the DHCP Cfg page. The *DHCP Cfg* page allows you to set:

- The DHCP startup, which determine if the PrintSir will act as DHCP server. If this item is set to Auto, the PrintSir will detect if there is any DHCP server on the network when it boots up. If there is no DHCP server on the network, then the PrintSir will configure itself as DHCP server; otherwise it will disable this function.
- IP Address: specifies the IP address of PrintSir itself.
- Starting IP: specifies the starting IP address for assigning to DHCP clients.
- IP range: specifies how many IP addresses are available to DHCP clients.
- Gateway IP: gives the IP address of the default gateway.
- Netmask: gives the network mask.
- Name server: gives the IP address of the domain name server.
- The *Write* button: save the configuration to the PrintSir.
- The *Reset* button: reset the PrintSir to let the changes take effect.

Part IV
Using the PrintSir with UNIX Systems

Using the PrintSir with Unix Systems

The PrintSir is available with support for TCP/IP printing using the Unix lpd (Line Printer Daemon) protocol. (You can also purchase an upgrade for NetWare-only PrintSir.) The lpd protocol originated with Unix release based on the BSD version of Unix and is now supported under most versions of Unix. Windows NT 3.5 and later also supports the lpd protocol.

This chapter explains how to configure the PrintSir for TCP/IP operation, and how to modify configuration files on your Unix system to allow printing to the PrintSir. The configuration examples in this manual follow the syntax for BSD based Unix systems. Please refer to the related system documentation for the correct syntax of your systems.

To configure the PrintSir to service lpd printing, perform the procedures below:

1. Enable the TCP/IP support of the PrintSir.

2. Set up an IP address to the PrintSir.

3. Verify the IP address of the PrintSir.

4. Configure remote lpd printing on the host.

5. Print a test page.

Enabling the TCP/IP Support of the PrintSir

The default configuration of the PrintSir is with TCP/IP support enabled. Anyway, you can configure the PrintSir to enable TCP/IP support using the installation program or PSETUP program in the driver diskette included with the PrintSir. For more detailed operation instructions, please refer to the next section.

Setting Up an IP Address to the PrintSir

The PrintSir must have a unique IP address in order to be recognized by the network.

You can set up the IP address on the various Unix systems using any one of the following methods:

- DHCP (Dynamic Host Configuration Protocol)
- BOOTP (Bootstrap Protocol)
- RARP (Reverse Address Resolution Protocol)
- INSTALL.EXE program
- PSETUP.EXE program

The PrintSir will use the first three methods to obtain its IP address automatically if its IP address is configured as Auto (0.0.0.0).

Using DHCP Protocol

There are few Unix systems support DHCP protocol and the procedures to configure the DHCP database are not the same, this manual does not describe the DHCP configuration on the Unix systems. You can configure a PrintSir as DHCP server, and configure another PrintSirs as DHCP clients.

Using BOOTP Protocol

If you have the BOOTP daemon, bootpd, running on your system that is accessible by the PrintSir, you can use the BOOTP protocol to setup the IP address of the PrintSir. We recommend that the BOOTP server should be located on the same subnet as the PrintSir. If you use Network Information Services (NIS) in your system, you may need to rebuild the NIS map with the BOOTP services before doing the following BOOTP configuration. To rebuild the NIS map, please refer to your system documentation.

To configure the IP address data for the BOOTP server, you will need to log in the host of BOOTP server as the `superuser` (root). Perform the following steps to add address entries,

1. Optionally, assign a name corresponding to the PrintSir's IP address. You can add this address to the `/etc/hosts` file, by adding a line such as:

   ```
   203.66.191.12          pserver
   ```

2. Add an entry to the host's `/etc/bootptab` file, similar to the following:

   ```
   hostname:\
     :ht=1:\
     :ha=print_server_ethernet_address:\
     :ip=print_server_ip_address:
   ```

   Lines should be indented with tabs.

   Where `hostname` is the actual name of a PrintSir, the `ht=1` tag specifies the hardware type is Ethernet, the `ha=` tag specifies the Ethernet address of a PrintSir, which included in the Device Name located on the PrintSir. The `ha` tag must be preceded by the ht tag. The `ip=` tag should correspond to the IP address you want to assign to the PrintSir.

   For example, a PrintSir with the following configuration:

   Device Name: PS010101 (this implies Ethernet address is 0000B4010101),

   IP address: 203.66.191.12

   The entry for this PrintSir in the `/etc/bootptab` file should be:

   ```
   PS010101:\
     :ht=1:\
     :ha=0000B4010101:\
     :ip=203.66.191.12:
   ```

Using RARP Protocol

This procedure below enables the RARP daemon running on your system to respond to a RARP request from the PrintSir and to assign the IP address to the PrintSir.

1. Log in the host of RARP server as the `superuser` (root).

2. Assign a name corresponding to the PrintSir's IP address. You can add this address to the `/etc/hosts` file, by adding a line such as:

203.66.191.12 pserver

3. Add the Ethernet address and the host name for the PrintSir to the `/etc/ethers` file, by adding a line such as:

00:00:B4:01:01:01 pserver

Where the Ethernet address of the PrintSir is included in the Device Name located on the PrintSir (Device Name: PS010101 implies its Ethernet address is 0000B4010101).

4. If your system uses Network Information Services (NIS), you will need to make changes to the NIS host and ethers databases.

5. Check if the RARP daemon is running using the ps and grep commands. If the RARP daemon is not running on your host, type "`rarpd -a`" to run the RARP server.

Using INSTALL.EXE Program

To set up an IP address to your PrintSir using INSTALL.EXE program, you will need to have a PC-compatible workstation with a network card and IPX network drivers. To configure the PrintSir itself,

1. Insert the floppy disk included with the PrintSir and change to the appropriate drive (A: or B), or copy the contents to your hard disk.

2. Run the INSTALL.EXE program by entering "`INSTALL -U`".

3. Choose your PrintSir from the displayed list, and press *Enter*. The displayed name should correspond to the Device Name printed on the PrintSir, provided you have not assigned it an alias name.

4. Change the TCP/IP configuration settings as appropriate. The available settings are:

- TCP/IP Support: determines whether or not TCP/IP network printing is supported. You should set this to ENABLE.
- IP Address: gives the IP address where the PrintSir is to be located.

To change a setting, move the cursor to the appropriate line and press *Enter*.

5. Choose *Continue Installation*. The new settings will be saved to the PrintSir.

6. Reset the PrintSir to have the changes take effect.

Using PSETUP.EXE Program

To set up an IP address to your PrintSir using PSETUP.EXE program, you will need to have a PC-compatible workstation with a network card and IPX network drivers. To configure the PrintSir itself

1. Insert the floppy disk included with the PrintSir and change to the appropriate drive (A: or B), or copy the contents to your hard disk.

2. Run the PSETUP.EXE program by entering "`PSETUP -U`".

3. Choose your PrintSir from the displayed list, and press *Enter*. The displayed name should correspond to the name printed on the PrintSir, provided you have not assigned it an alias name.

4. Choose *TCP/IP Configuration* to change the TCP/IP configuration settings as appropriate. The available settings are:

- TCP/IP Support: determines whether or not TCP/IP network printing is supported. You should set this to ENABLE.
- IP Address: gives the IP address where the PrintSir is to be located.
- DHCP server: determines whether or not enable the DHCP server function.
- Starting IP: specifies the starting IP address for assigning to DHCP clients.
- IP range: specifies how many IP addresses are available to DHCP clients.
- Gateway IP: gives the IP address of the default gateway.
- Netmask: gives the network mask.

- Name server: gives the IP address of the domain name server.

To change a setting, move the cursor to the appropriate line and press *Enter*.

5. Press *Escape* and choose *Yes* in *Save Change* menu. The new settings will be saved to the PrintSir.

6. Reset the PrintSir to have the changes take effect.

Verifying the IP Address of the PrintSir

To verify that your PrintSir is responding to the newly assigned IP address using a PING command (available under Unix, Windows NT, or *Windows 95/98* or later):

```
ping ip-address
```

Configuring Remote LPD Printing on Unix

The procedure you use to configure your Unix host(s) to allow printing to your network remote print server varies between different varieties of Unix. The procedure below can be used for Unix variants that are related to BSD Unix, such as SunOS or Linux. For other versions of Unix, consult your system documentation, keeping in mind that:

- The PrintSir should be treated as a BSD networked print server host.
- The host name should be the name (or IP address) that you have assigned to the PrintSir.
- The printer name on the remote host should be `lpt1`, `lpt2` or `lpt3`, the name of the parallel port on the PrintSir.

You will need to perform the tasks below, logged in as the `superuser (root)`. To configure your Unix host for printing,

1. Optionally, assign a name corresponding to the PrintSir's IP address. You can add this address to the `/etc/hosts` file, by adding a line such as:

```
203.66.191.186        pserver
```

2. Create a spool directory for the printer in the same directory where spool directories are normally kept on the machine, such as `/var/spool` or `/var/spool/lpd`:

```
mkdir /var/spool/lpd/pserverd
chown daemon /var/spool/lpd/pserverd
chgrp daemon /var/spool/lpd/pserverd
chmod 775 /var/spool/lpd/pserverd
```

3. Add an entry to the host's `/etc/printcap` file, similar to the following:

```
printer-name:\
 :lp=:\
 :rm=203.66.191.186:\
 :rp=lpt1:\
 :lf=/var/spool/lpd/pserverd.log:\
 :sd=/var/spool/lpd/pserverd:\
 :mx#0:
```

   Lines should be indented with tabs. More than one printer name can be used, with variants separated by vertical bars (*name1*|*name2*).

   The `rm=` entry should correspond to the IP address you have assigned to the PrintSir. You can also use a host name if you have assigned one in the `/etc/hosts` file.

   The `sd=` entry should correspond to the spool directory you created in the previous step.

   The `rp=` entry should correspond to the port name of the remote printer. The values should be `lpt1`, `lpt2` or `lpt3`.

   The PrintSir should now be available for printing from your Unix host.

Printing a Test Page

To print to the PrintSir, you can use the lpr command:

lpr -P*printer-name* file ...

or, you can use the lp command on SCO Open Server:

lp –d *printer-name* file ...

Where *`printer-name`* is one of the names for the printer in the `/etc/printcap` file, which you created in the previous step.

Consult your system documentation for more information about printer configuration and administration and about lpr and other printing commands.

Part V
Using the PrintSir with Windows Networks

Configuring a Network Printer for Windows 95/98

Though the Windows 95/98 supports TCP/IP protocol stack, it does not provide any printing utility for TCP/IP. We do provide a print driver using the lpd protocol to allow you to print to the PrintSir via TCP/IP protocol. This chapter explains how to configure the PrintSir for TCP/IP operation, and how to configure your Windows 95/98 to allow printing to the PrintSir.

You may have one NT server and several Windows 95/98 workstations on one network. The NT server is not required on the network depending on your requirements. The NT server will act as a DHCP server to provide dynamic IP address assignment or it will share its network printer to the clients.

Preparing Windows 95/98 for TCP/IP Support

First, you will have to enable the TCP/IP protocol at the Windows 95/98 workstations, and enable the Microsoft TCP/IP printing service at NT server if it will share its network printer, using the Windows NT Network control panel. To configure TCP/IP protocol at the Windows 95/98, do the following instructions:

1. Start *Network* option in *Control Panel*, the *Network* dialog box will appear. If TCP/IP protocol is listed under *Installed Network Software*, you have already installed the necessary software, skip the following procedures and exit the *Network* dialog box.

2. If you have not installed the necessary software yet, click *Add* button.

3. Select *Protocol* and then click *Add*, the *Select Network Protocol* dialog box will appear.

4. Select *Microsoft* in the *Manufacturers* column and select *TCP/IP* in the *Network Protocols* column, then click *OK* to return to the *Network* dialog box.
5. Select *TCP/IP* and click *Properties*, the *TCP/IP Properties* dialog box will appear.
6. Select *Gateway* option to add IP address of gateway, select *IP Address* option and check the *Specify an IP address* box then enter IP address and subnet mask for this Windows 95/98 or just check the *Obtain an IP address automatically* box to allow the DHCP server to assign an IP address. Click *OK* to return to the *Network* dialog box. It is highly recommended to have this Windows 95/98 get its IP address automatically if your network is not complicated.
7. Click *OK* to exit and then restart your computer for the changes to take effect.

To configure the PrintSir to service lpd printing, perform the procedures below:

1. Install the PrintSir LPR Network Print Driver for Windows 95/98 to each Windows 95/98 workstation.
2. Configure the lpr printer on each Windows 95/98.
3. Enable the TCP/IP support of the PrintSir if it has not enabled yet.
4. Set up an IP address to the PrintSir if it has not been assigned yet.
5. Optionally, verify the IP address of the PrintSir.
6. Optionally, configure the PrintSir as DHCP server if needed.
7. Print a test page.

The procedures 3, 4, 5 and 6 are optional and should be done by the network administrator. Please refer to the latter sections of this manual for the detail of procedures 3, 4, 5 and 6.

Installing LPR Network Print Driver on Windows 95/98

You will need to perform the tasks below to install the *PrintSir LPR Network Print Driver for Windows 95/98* at each *Windows 95/98*:

1. Run Setup from the *LPR Network Print Driver for Windows 95/98* diskette shipped with the PrintSir.
2. Click *Finish* when the *Setup Complete* dialog box appears and restart your computer.

Configuring LPR Printer on Windows 95/98

You will need to perform the tasks below to set up the LPR printer at each *Windows 95/98*:

1. Click *Start* button and point to *Settings* menu, then click *Printers*.
2. Double click on the *Add Printer* icon.
3. Select *Local printer*, and click *Next*.
4. Select the appropriate printer manufacturer and model, then click *Next*.
5. Select *LPT1* (or any port) and click *Next*.
6. Type the Printer name and click *Next*.
7. *Windows 95/98* will ask if you like to print a test page, check the *No* box and click *Finish*. The newly created printer icon will be added to the *Printers* group.
8. Double click on the newly created printer icon.
9. Select the *Printer* menu and select *Properties*.
10. Click *Details* option.
11. Click on *Add Port*.
12. Check the *Other* option, and choose *PrintSir LPR Port*, then click *OK*.
13. The *Add PrintSir* dialog box will appear. Our program will use either IPX or IP protocol to browse the network to find if there is any PrintSir on the same network. The PrintSirs found on the

same network will be placed in the *PrintSir List*. If your PrintSir is not listed in the *PrintSir List*, click *New...* button to create a new PrintSir, enter the PrintSir name (Device Name located on the PrintSir is recommended) and IP address. Select a PrintSir from the *PrintSir List*. Click *OK* to return to the *Printer Properties* dialog box.

14. Click *OK* to exit.

15. If your PrintSir is with multiple parallel ports, create printer icons for each parallel port.

If your PrintSir has not been configured correctly, please ask your network administrator to do the next 4 procedures to configure the PrintSir. The PrintSir should now be available for printing from your *Windows 95/98* machine using ordinary print commands.

Enabling the TCP/IP Support of the PrintSir

The default configuration of the PrintSir is with TCP/IP support enabled. Anyway, you can configure the PrintSir to enable/disable TCP/IP support as your requirement. You will need to perform the tasks below to enable/disable TCP/IP support of the PrintSir:

1. Double click on the newly created printer icon.

2. Select the *Printer* menu and select *Properties*.

3. Click *Details* option.

4. Click on *Port Setting* button.

5. Toggle the *TCP/IP Support* option to enable/disable the TCP/IP support.

6. The IP address setting will be described in the next section.

7. Check the *Reset PrintSir* option in order to let the changes take effect.

8. Click *OK* to exit.

Setting Up an IP Address to the PrintSir

The PrintSir must have a unique IP address in order to be recognized by the network.

Perform the tasks below to set up the IP address of the PrintSir on the *Windows 95/98*:

1. Double click on the newly created printer icon.
2. Select the *Printer* menu and select *Properties*.
3. Click *Details* option.
4. Click on *Port Setting* button.
5. The *TCP/IP Support* setting is described in the previous section.
6. There are two options, *Auto* and *Manual*, in the IP Address section. Check the *Auto* option if you want the PrintSir to obtain its IP address automatically; otherwise, check the *Manual* option and assign a proper IP address to the PrintSir.
7. Check the *Reset PrintSir* option in order to let the changes take effective.
8. Click *OK* to exit.

The PrintSir will use the following method to get its IP address from the network automatically if its IP address is configured as Auto (0.0.0.0):

- DHCP (Dynamic Host Configuration Protocol)

Using DHCP Protocol

If you have a DHCP server running on the same network with the PrintSir, you can use the DHCP protocol to setup the IP address of PrintSir.

To configure DHCP server on an NT server, please refer to the next two chapters: Configuring a Network Printer for NT 3.5X and Configuring a Network Printer for NT 4.X. There are three ways to view the IP address of the PrintSir which IP address is assigned by a DHCP server. The first one is to run PSETUP.EXE under DOS environment and select PrintSir Status item to view the status from the

PrintSir. The second is to run PrintSir Configuration for *Windows 95/98*/NT program and select PrintSir Status option to view the Active IP. For more detailed operation instructions, please refer to the chapter, ***Using PrintSir Configuration for Windows 95/98/NT*** on page *85*. The last is to view those assigned IP addresses from the DHCP Manager of the NT server if the NT server is configured as DHCP server.

Configuring the PrintSir as DHCP Server

You can use *PSETUP.EXE* program on DOS or *PrintSir Configuration for Windows 95/98/NT* program to configure a PrintSir as DHCP server, please refer to the chapter ***PrintSir's TCP/IP Implementation*** on page 32 for more detailed information.

Verifying the IP Address of the PrintSir

To configure a PrintSir as DHCP server, please refer to the chapters To verify that your PrintSir is responding to the newly assigned IP address using a PING command at DOS prompt:

```
ping ip-address
```

Printing a Test Page

To verify if the *Windows 95/98* can print to the PrintSir, perform the following tasks:

1. Double click on the newly created printer icon.
2. Select the *Printer* menu and select *Properties*.
3. Click *General* option.
4. Click *Print Test Page* button. A test page will be printed from the printer attached by the PrintSir if the configuration is correct.
5. Click *OK* to exit.

Configuring a Network Printer for NT 3.5X

Recent versions of Windows NT also contain support for printing to print servers using the lpd protocol. The PrintSir is available with support TCP/IP printing using lpd protocol. This chapter explains how to configure the PrintSir for TCP/IP operation, and how to configure your Windows NT to allow printing to the PrintSir. Please refer to the Windows NT documentation for the detailed information.

You may have one NT server and several NT clients in one network. The NT server is not required in the network depending on your requirements. The NT server will act as a DHCP server to provide dynamic IP address assignment or it will share its network printer to the clients.

Preparing Windows NT for TCP/IP Support

First, you will have to enable the TCP/IP protocol at all NT server and NT clients, and enable the Microsoft TCP/IP printing service at each NT client or at NT server if it will share its network printer, using the Windows NT Network control panel. To configure TCP/IP protocol and Microsoft TCP/IP printing service, follow the following instructions:

1. Start *Network* option in *Control Panel*, the *Network Setting* dialog box will appear. If TCP/IP protocol and Microsoft TCP/IP printing service are listed under *Installed Network Software*, you have already installed the necessary software, exit *Network* Setting.

2. If you have not installed the necessary software yet, select *Add* Software.

3. Select *TCP/IP Protocol And Related Components*. If you want to use DHCP protocol on the NT server, also select *DHCP Server Service*.

4. Choose *Continue*.
5. Click the *Microsoft TCP/IP Printing* Service option, and then choose *OK*.
6. Select *OK* in the *Network Setting* dialog box, the *TCP/IP Configuration* dialog box will appear.
7. On the NT clients, type a static IP address, default gateway address and subnet mask or just check the *Enable Automatic DHCP Configuration* option to allow the DHCP server to assign an IP address. On the NT server, type a static IP address, default gateway address and subnet mask.
8. After you finish configuring TCP/IP, the *Network Setting* dialog box will appear, click *Close* button to exit and then restart your computer for the changes to take effect.

To configure the PrintSir to service lpd printing, perform the procedures below:

1. Enable the TCP/IP support of the PrintSir.
2. Set up an IP address to the PrintSir.
3. Verify the IP address of the PrintSir.
4. Configure the lpr printer on each Windows NT.
5. Print a test page.

Enabling the TCP/IP Support of the PrintSir

The default configuration of the PrintSir is with TCP/IP support enabled. Anyway, you can configure the PrintSir to enable TCP/IP support using the installation program, *INSTALL.EXE*, or setup program, *PSETUP.EXE*, in the driver diskette included with the PrintSir. You must install *IPX/SPX network protocol* and *Client Service for NetWare* on the NT clients before running *INSTALL.EXE* and/or *PSETUP.EXE*. For more detailed operation instructions, please refer to the same section of the previous chapter, ***Using the PrintSir with Unix Systems*** on page *38*. You can also configure the PrintSir using *PrintSir Configuration for Windows 95/98/NT* program, in the diskette included with the PrintSir. You must load either *IPX/SPX* or

TCP/IP network protocol on the NT clients before running *PrintSir Configuration for Windows 95/98/NT* program. For more detailed operation instructions, please refer to the chapter, ***Using PrintSir Configuration for Windows 95/98/NT*** on page 85.

Setting Up an IP Address to the PrintSir

The PrintSir must have a unique IP address in order to be recognized by the network.

You can set up the IP address of PrintSir using any one of the following methods:

- DHCP (Dynamic Host Configuration Protocol)
- INSTALL.EXE program
- PSETUP.EXE program
- PrintSir Configuration for ***Windows 95/98***/NT program

The PrintSir will use the first method to obtain its IP address automatically if its IP address is configured as Auto (0.0.0.0).

Using DHCP Protocol

If you want to use DHCP protocol to dynamically assign IP address, you should set up a pool of IP address that the DHCP server could assign to any client requester including NT workstation and/or PrintSir. To configure a PrintSir as DHCP server, please refer to the chapter, ***PrintSir's TCP/IP Implementation*** on page 32. To configure DHCP server on an NT server, perform the following tasks:

1. Start Network Administration in Program Manager.
2. Double click on the *DHCP Manager* icon.
3. Choose *Server* menu and select *Add*.
4. Type the server's IP address, and then click *OK* to return to the *DHCP Manager*.
5. Select the server you have just added, then choose *Scope* and select *Create*.

6. Setup the IP address range by entering *Start Address*, *End Address* and *Subnet Mask* in the *IP Address Pool* section.
7. Select *Unlimited in the Lease Duration* section and select *OK*. To select unlimited is a simple way to configure, but you do not need to do so, please refer to the NT documentation for more detailed information.
8. Click *OK* and activate the new scope, then return to the *DHCP Manager*, and click *Close* to exit.

There are three ways to view the IP address of the PrintSir which IP address is assigned by a DHCP server. The first one is to run *PSETUP.EXE* under DOS environment and select *PrintSir Status* item to view the status from the PrintSir. The second is to run *PrintSir Configuration for Windows 95/98/NT* program and select *PrintSir Status option* to view the *Active IP*. For more detailed operation instructions, please refer to the chapter, ***Using PrintSir Configuration for Windows 95/98/NT*** on page 85. The last is to view those assigned IP addresses from the DHCP Manager of the NT server if the NT server is configured as DHCP server.

Using INSTALL.EXE Program

To set up an IP address to your PrintSir using *INSTALL.EXE* program, you must install *IPX/SPX network protocol* and *Client Service for NetWare* on the NT before running *INSTALL.EXE*. For more detailed operation instructions, please refer to the previous chapter, ***Using the PrintSir with Unix Systems*** on page 41.

Using PSETUP.EXE Program

To set up an IP address to your PrintSir using *PSETUP.EXE* program, you must install *IPX/SPX network protocol* and *Client Service for NetWare* on the NT before running *PSETUP.EXE*. For more detailed operation instructions, please refer to the previous chapter, ***Using the PrintSir with Unix Systems*** on page 42.

Using PrintSir Configuration for Windows 95/98/NT Program

To set up an IP address to your PrintSir using *PrintSir Configuration for Windows 95/98/NT* program, You must load either *IPX/SPX* or *TCP/IP network protocol* on the NT clients before running *PrintSir Configuration for Windows 95/98/NT* program. For more detailed operation instructions, please refer to the chapter, ***Using PrintSir Configuration for Windows 95/98/NT*** on page 85.

Verifying the IP Address of the PrintSir

To verify that your PrintSir is responding to the newly assigned IP address using a PING command at DOS prompt:

```
ping ip-address
```

Configuring LPR Printer on NT

You will need to perform the tasks below to set up the default printer at each Windows NT:

1. From the *Program Manager* window, double click on the *Main* icon, then double click on the *Print Manager* icon.
2. Select *Create Printer* from *Printer* menu.
3. Type a printer name in the *Printer Name* field.
4. Select the appropriate printer driver from the *Driver list*.
5. Select *Other*... in the *Print To* box, then choose *LPR Port*, and click *OK*.
6. Enter the IP address of the PrintSir in the first field, and the port name (`lpt1, lpt2 or lpt3`) in the second field. Click *OK*.
7. Click *OK* to complete the configuration.
8. If your PrintSir is with multiple parallel ports, create printer icons for each parallel port.

The PrintSir should now be available for printing from your NT machine using ordinary print commands.

Printing a Test Page

To verify if the NT can print to the PrintSir, you can use the `lpr` command at the DOS prompt:

lpr -S ip-address -P port-name file ...

Where *`ip-address`* is the IP address of the PrintSir; `port-name` is the port name of the PrintSir, its value should be one of `lpt1, lpt2 or lpt3.`

Consult your system documentation for more information about printer configuration and administration and about lpr and other printing commands.

Configuring a Network Printer for NT 4.X

Windows NT also contains support for printing to print servers using the lpd protocol. The PrintSir is available with support TCP/IP printing using lpd protocol. This chapter explains how to configure the PrintSir for TCP/IP operation, and how to configure your Windows NT to allow printing to the PrintSir. Please refer to the Windows NT documentation for the detailed information.

You may have one NT server and several NT clients in one network. The NT server is not required in the network depending on your requirements. The NT server will act as a DHCP server to provide dynamic IP address assignment or it will share its network printer to the clients.

Preparing Windows NT for TCP/IP Support

First, you will have to enable the TCP/IP protocol at all NT server and NT clients, and enable the Microsoft TCP/IP printing service at each NT client or at NT server if it will share its network printer, using the Windows NT Network control panel. To configure TCP/IP protocol and Microsoft TCP/IP printing service, follow the following instructions:

1. Start *Network* option in *Control Panel*, the *Network* Setting dialog box will appear. Under *protocols* and *services*, if *TCP/IP protocol* and *Microsoft TCP/IP printing* are listed under installed Network Software, you have already installed the necessary software, exit *Network* Setting.

2. If you have not installed the necessary software yet, select *Add* Software.

3. Select *TCP/IP Protocol* And Related Components. If you want to use DHCP protocol on the NT server, also select *Microsoft DHCP Server* Service.

4. Choose *Continue*.
5. Click the *Microsoft TCP/IP Printing* Service option, and then choose *OK*.
6. Select *OK* in the *Network* Setting dialog box, the *TCP/IP Configuration* dialog box will appear.
7. On the NT clients, type a static IP address, default gateway address and subnet mask or just check the *Obtain an IP address from DHCP server* option to allow the DHCP server to assign an IP address. On the NT server, type a static IP address, default gateway address and subnet mask.
8. After you finish configuring TCP/IP, then click OK button to exit and then restart your computer for the changes to take effect.

To configure the PrintSir to service lpd printing, perform the procedures below:

1. Enable the TCP/IP support of the PrintSir.
2. Set up an IP address to the PrintSir.
3. Verify the IP address of the PrintSir.
4. Configure the lpr printer on each Windows NT.
5. Print a test page.

Enabling the TCP/IP Support of the PrintSir

The default configuration of the PrintSir is with TCP/IP support enabled. Anyway, you can configure the PrintSir to enable TCP/IP support using the installation program, *INSTALL.EXE*, or setup program, *PSETUP.EXE*, in the driver diskette included with the PrintSir. You must install *Nwlink IPX/SPX Compatible Transport Protocol* (or *IPX/SPX network protocol*) and *Gateway (and Client) Services for NetWare* on the NT clients before running *INSTALL.EXE* and/or *PSETUP.EXE*. For more detailed operation instructions, please refer to the same section of the previous chapter, ***Using the PrintSir with Unix Systems*** on page 41 and page 42. You can also configure the PrintSir using *PrintSir Configuration for Windows 95/98/NT*

program, in the diskette included with the PrintSir. You must load either *IPX/SPX* or *TCP/IP network protocol* on the NT clients before running *PrintSir Configuration for Windows 95/98/NT* program. For more detailed operation instructions, please refer to the chapter, ***Using PrintSir Configuration for Windows 95/98/NT*** on page 85.

Setting Up an IP Address to the PrintSir

The PrintSir must have a unique IP address in order to be recognized by the network.

You can set up the IP address of PrintSir using any one of the following methods:

- DHCP (Dynamic Host Configuration Protocol)
- INSTALL.EXE program
- PSETUP.EXE program
- PrintSir Configuration for ***Windows 95/98***/NT program

The PrintSir will use the first method to obtain its IP address automatically if its IP address is configured as Auto (0.0.0.0).

Using DHCP Protocol

If you want to use DHCP protocol to dynamically assign IP address, you should set up a pool of IP address that the DHCP server could assign to any client requester including NT workstation and/or PrintSir. To configure a PrintSir as DHCP server, please refer to the chapter, ***PrintSir's TCP/IP Implementation*** on page 32. To configure DHCP server on an NT server, perform the following tasks:

1. Click *Start* button and point to *Programs*, point to *Administrative Tools*, then click *DHCP Manager*.

2. Choose *Server* menu and select *Add*.

3. Type the server's IP address, and then click *OK* to return to the *DHCP Manager*.

4. Double click to select the server you just added, then choose *Scope* and select *Create*.

5. Setup the IP address range by entering *Start Address*, *End Address* and *Subnet Mask* in the *IP Address Pool* section.
6. Select *Unlimited in the Lease Duration* section and select *OK*. To select unlimited is a simple way to configure, but you do not need to do so, please refer to the NT documentation for more detailed information.
7. Click *OK* and activate the new scope, then return to the *DHCP Manager*, and click *Close* to exit.

There are three ways to view the IP address of the PrintSir which IP address is assigned by a DHCP server. The first one is to run *PSETUP.EXE* under DOS environment and select *PrintSir Status* item to view the status from the PrintSir. The second is to run *PrintSir Configuration for Windows 95/98/NT* program and select *PrintSir Status option* to view the *Active IP*. For more detailed operation instructions, please refer to the chapter, ***Using PrintSir Configuration for Windows 95/98/NT*** on page 85. The last is to view those assigned IP addresses from the DHCP Manager of the NT server.

Using INSTALL.EXE Program

To set up an IP address to your PrintSir using *INSTALL.EXE* program, you must install *IPX/SPX network protocol* and *Gateway (and Client) Services for NetWare* on the NT before running *INSTALL.EXE*. For more detailed operation instructions, please refer to the previous chapter, ***Using the PrintSir with Unix Systems*** on page 41.

Using PSETUP.EXE Program

To set up an IP address to your PrintSir using *PSETUP.EXE* program, you must install *IPX/SPX network protocol* and *Gateway (and Client) Service for NetWare* on the NT before running *PSETUP.EXE*. For more detailed operation instructions, please refer to the previous chapter, ***Using the PrintSir with Unix Systems*** on page 42.

Using PrintSir Configuration for Windows 95/98/NT Program

To set up an IP address to your PrintSir using *PrintSir Configuration for Windows 95/98/NT* program, You must load either *IPX/SPX* or *TCP/IP network protocol* on the NT clients before running *PrintSir Configuration for Windows 95/98/NT* program. For more detailed operation instructions, please refer to the chapter, ***Using PrintSir Configuration for Windows 95/98/NT*** on page 85.

Verifying the IP Address of the PrintSir

To verify that your PrintSir is responding to the newly assigned IP address using a PING command at DOS prompt:

```
ping ip-address
```

Configuring LPR Printer on NT

You will need to perform the tasks below to set up the default printer at each Windows NT:

1. Click *Start* button and point to *Settings* menu, then click *Printers*.
2. Double click on the *Add New Printer* icon.
3. Select *My Computer*, and click *Next*.
4. Click on *Add Port*.
5. Choose *LPR Port*, and click *New Port*; or double click *LPR Port*.
6. Enter the IP address of the PrintSir in the first field, and the port name (`lpt1, lpt2 or lpt3`) in the second field. Click *OK*.
7. Click *Close* to exit the *Add Port* dialog.
8. Click *Next* > to continue setting up the printer. The *Add Printer* Wizard will ask you to select a printer driver and type a printer name, then ask you to determine whether to share this printer newly created or not. If you want to share the printer with clients of the server, select *Shared*, otherwise select *Not shared*.
9. If your PrintSir is with multiple parallel ports, create printer icons for each parallel port.

The PrintSir should now be available for printing from your NT machine using ordinary print commands.

Printing a Test Page

To verify if the NT can print to the PrintSir, you can use the `lpr` command at the DOS prompt:

lpr -S ip-address -P port-name file ...

Where *`ip-address`* is the IP address of the PrintSir; `port-name` is the port name of the PrintSir, its value should be one of `lpt1, lpt2 or lpt3.`

Consult your system documentation for more information about printer configuration and administration and about lpr and other printing commands.

Part VI
Web Management

Overview of World Wide Web

With the near-universal changeover to TCP/IP protocols since the years 1980s, the word ***Internet*** became the common term for referring to the worldwide network. To help promote and facilitate the concept of distributed computing via the Internet, the World Wide Web was created in 1992. The Web incorporated graphics, typographic text styles and, most importantly, hypertext links. The hypertext concept has since been expanded to incorporate the idea of hypermedia, in which links can also be added to and from graphics, video and audio clips. The Web uses three new technologies: HTML, or HyperText Markup Language, is used to write Web pages; a Web server computer uses HTTP (HyperText Transfer Protocol) to transmit those pages; and a Web browser client program receives the data, interprets it and displays the results. Using HTML, almost anyone with a text editor and an Internet site can build visually interesting pages that organize and present information in a way seldom seen in other online venues. In fact, Web sites are said to be composed of pages because the information on them looks more like magazine pages than traditional computer screens. The Internet is growing at a phenomenal rate as a whole, but the Web is growing so much faster that it almost seems destined to take over the whole Net. Expect Web growth in the near future to continue to be driven and driven hard by business expansion into cyberspace.

How the Web Works

The World Wide Web is with client/server architecture. This means that a client program running on your computer (your Web browser) requests information from a server program running on another computer somewhere on the Internet. That server then sends the requested data back over the Net to your browser program, which interprets and displays the data on your screen. The following steps explain the process:

1. Run a Web browser client program on your computer.

2. Connect to the Internet.

3. Request a page from a site on the Web. Your browser sends a message over the Internet that includes the following:

- The transfer protocol (http://)
- The address, or Uniform Resource Locator (URL), e.g., www.printsir.com

4. The server receives your request and retrieves the requested Web page, which is composed in HTML.

5. The server then transmits the requested page back across the Internet to your computer.

6. Your browser program receives the HTML text and displays its interpretation of the page you requested.

Web Management of PrintSir

To unify the user interfaces and to ease the PrintSir administration, the PrintSir supports Web server function depending on what model you have. You can use a browser client program to set up or view the configuration of a PrintSir. Run the browser program from your computer and enter the IP address of the PrintSir you want to configure, then you will get the Web pages from that PrintSir. Please refer to the section ***Using Browser*** on page ***71*** for more detailed information. If you do not know the IP address of the PrintSir, the PrintSir provides the "WebDESK Administrator" management utility to help you browse all PrintSirs running on the same network. The "WebDESK Administrator" program is designed with plug-ins technology. For more detailed information about plug-ins technology, please refer to Netscape's Web site.

Using WebDESK Administrator

It is not required to install the "WebDESK Administrator" unless you really do not know the IP address of the PrintSir. The "WebDESK Administrator" program browses all PrintSirs available on the same network with the computer running this utility. Those PrintSirs that are found by the "WebDESK Administrator" program should support Web management. Note that the "WebDESK Administrator" program must be run with Netscape Navigator 4.0 or later, and Microsoft Internet Explorer 4.0 or later.

Installing WebDESK Administrator

You will need to perform the tasks below to install the *WebDESK Administrator* on Windows 95/98 or Windows NT:

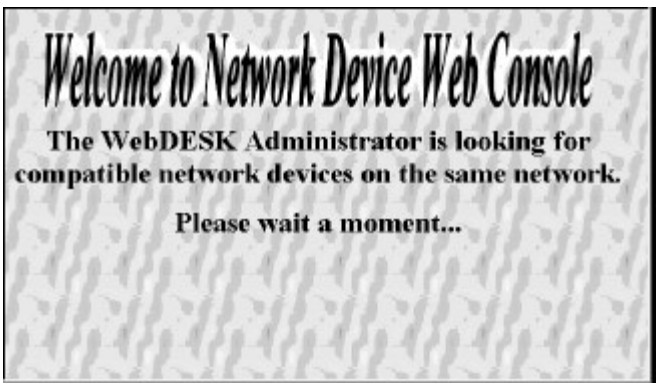
1. Run Setup from the *WebDESK Administrator* diskette shipped with the PrintSir.
2. Click *Next* button to begin installation.
3. Specify the *Destination Folder* and click *Next* button.
4. Specify the *Program Folder* and click *Next* button.

5. The installation program will copy all necessary files to your workstation and show a progress bar graph, then create a program folder.

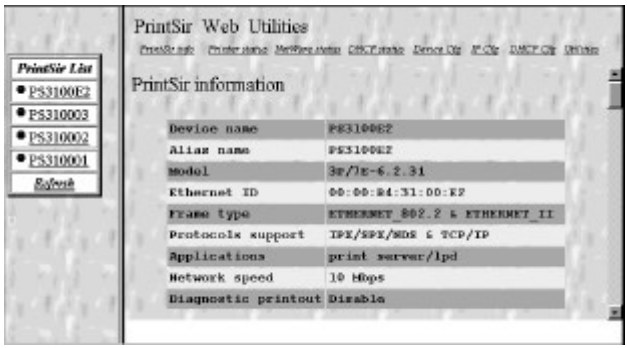
The *WebDESK Admin* in *WebDESK Manager* program folder is a Web page written in HTML, you may add this page to your Bookmarks of Netscape Navigator or Favorites of Microsoft Internet Explorer. When the installation is complete, you can begin using the *WebDESK Administrator* program.

Starting WebDESK Administrator Program

To run the *WebDESK Administrator* program, double click the icon of *WebDESK Admin* in *WebDESK Manager* program folder, or select *WebDESK Admin* page from the Bookmarks or Favorites of your browser. Your browser will display the *Network Device Web Console* page as below:


Welcome to Network Device Web Console
The WebDESK Administrator is looking for compatible network devices on the same network.
Please wait a moment...

The *Network Device Web Console* will locate all PrintSirs currently run on the same network using IP protocol. This will take about 5 seconds. The browser will list all PrintSirs support Web management function but not list those not support web management function. The browser will display the Web pages for the first PrintSir in the list as well. The displayed window is shown as below:



The window will be split into two parts:

1. PrintSir List on the left portion, which lists all PrintSirs found on the same network.
2. Web pages for the selected PrintSir on the right portion, which displays the configuration information for the PrintSir.

To view or change the configuration of a PrintSir via the Web management utility, please follow the following instructions:

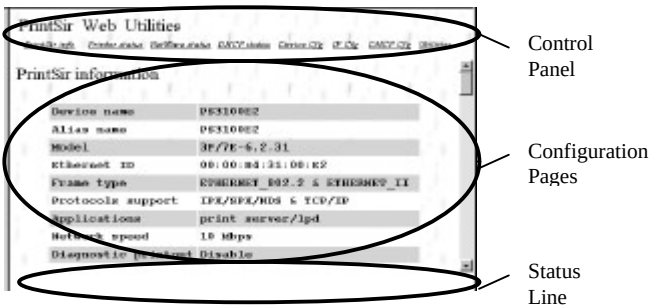
- Choose your PrintSir from the *PrintSir List* on the left side of window. The displayed name should correspond to the Device Name printed on the PrintSir, provided you have not assigned it an alias name.
- You may want to get more recently active PrintSirs by pressing "*Refresh*" button.

When you choose a PrintSir from the *PrintSir List*, the Web pages containing the configuration information of the selected PrintSir will display on the right portion of window. Note that you may use browser without WebDESK Administrator to get the configuration information of PrintSir and you will find the Web pages are the same with those with *WebDESK Administrator*. The difference between these two methods is the left portion of window, one with the PrintSir List but the other without. For detailed instructions on how to configure PrintSir, please refer to the next section, ***Using Browser,*** on page ***71***.

Using Browser

You can use any brand and/or any version of browser to connect to the PrintSir. Run your browser, enter the IP address of PrintSir as the URL, then you will get the Web pages from the PrintSir. There are three frames in the browser window:

- Control Panel on the top, which contains several HyperText links that links to an information or configuration page respectively.
- Status Line on the bottom, which is used to display warning or error message.
- Configuration Pages in the middle, which contains several information pages about PrintSir and its attached printer(s), and several configuration pages used to set up PrintSir.



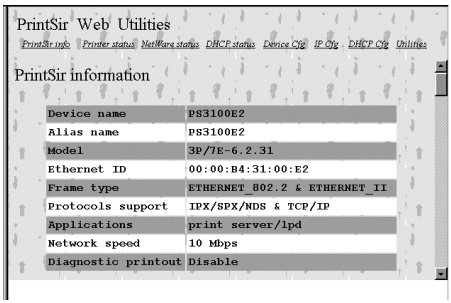
The browser will group the configuration items into 8 pages as below:

- PrintSir information: general information of PrintSir
- Printer status: current status of the attached printer(s)
- NetWare status: PrintSir connection information for NetWare
- DHCP status: current DHCP server status and information
- Device Cfg: device configuration
- IP Cfg: IP configuration
- DHCP Cfg: configure DHCP parameters
- Utilities: some utilities to PrintSir

In order to protect your PrintSir, you can get all information pages at any time you like, but you can not get the configuration pages before password verification. You will be asked to check password when you want to get a configuration page and you have not been verified yet. Please enter password at that moment and re-get the configuration pages again. The configuration pages will now be displayed in the browser window.

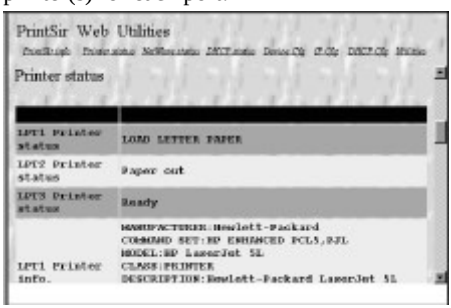
Getting PrintSir Information

Each time you run browser to connect to a PrintSir, you will get this *PrintSir information* page initially. The *PrintSir information* page displays some general information of PrintSir.



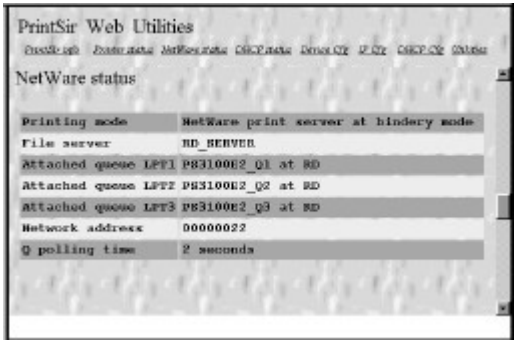
Getting Printer Status

The *Printer status* page can be used to display the status of attached printer(s) for each port.



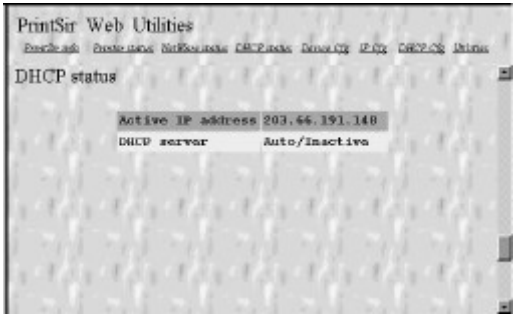
Getting NetWare Information

The *NetWare status* page displays the NetWare connection information of the PrintSir.



Getting DHCP information

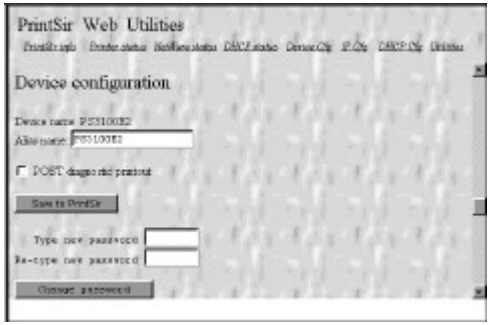
The *DHCP status* page can be used to display the DHCP information when the PrintSir is with DHCP function.



Changing Device Configuration

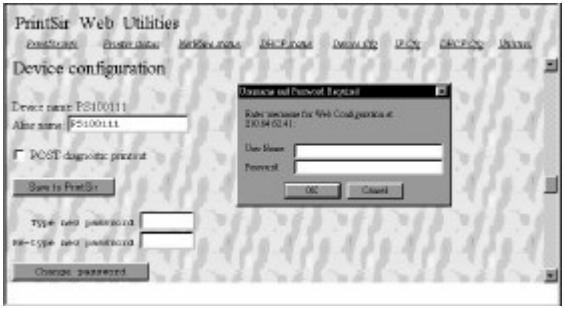
The *Device Cfg* page allows you to set:

- The *Alias name*, an alternate name by which the PrintSir can be called (in addition to the PSxxxxxx name printed on the label).



- The *POST diagnostic printout*, which determines whether or not a diagnostic printout should be printed to the attached printer.
- The *Save to PrintSir* button: save the configuration to the PrintSir.
- The *Type new password*, change to new password.
- The *Re-type new password*, confirm the new password.
- The *Change password* button: save the new password to the PrintSir.

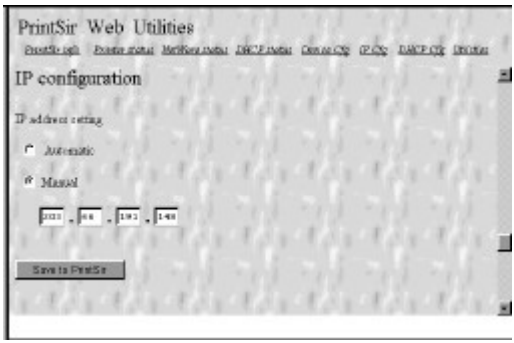
The PrintSir will verify your password (it will ignore the User Name item) when you save the configuration. The Security check page is as below:



Make sure to reset the PrintSir (described in the ***Using Utilities*** section on page ***76***) to let the changes take effect.

Setting up IP Address

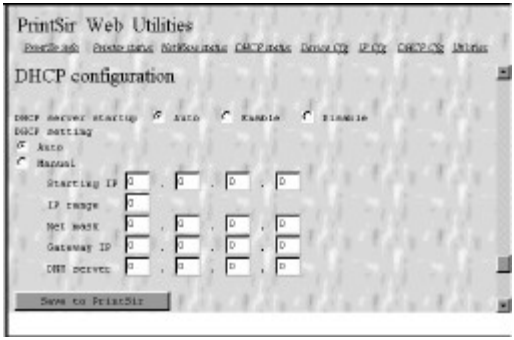
The *IP Cfg* page allows you to configure the IP address where the PrintSir is to be located. The PrintSir will obtain its IP address automatically if you configure the IP address as *Auto*. Click *Save to PrintSir* button to save the configuration to the PrintSir. The PrintSir will verify your password (it will ignore the User Name item) when you save the configuration. The Security check page is shown in the ***Changing Device Configuration*** section on page ***74***. Make sure to reset the PrintSir (described in the ***Using Utilities*** section on page ***76***) to have the changes take effect.



Configuring DHCP Parameters

The PrintSir can be configured as DHCP server to provide dynamic IP addresses assignment. The *DHCP Cfg* page allows you to set:

- The DHCP server startup, which determine if the PrintSir will act as DHCP server. If this item is set to Auto, the PrintSir will detect if there is any DHCP server on the network when it boots up. If there is no DHCP server on the network, then the PrintSir will configure itself as DHCP server; otherwise it will disable this function.
- DHCP setting is used to configure TCP/IP parameters that will be assigned to a DHCP client. If this item is set to Auto, the PrintSir will determine all TCP/IP parameters automatically; otherwise you will configure the following parameters:



- IP Address: specifies the IP address of PrintSir itself.
- Starting IP: specifies the starting IP address for assigning to DHCP clients.
- IP range: specifies how many IP addresses are available to DHCP clients.
- Net mask: gives the network mask.
- Gateway IP: gives the IP address of the default gateway.
- DNS server: gives the IP address of the domain name server.

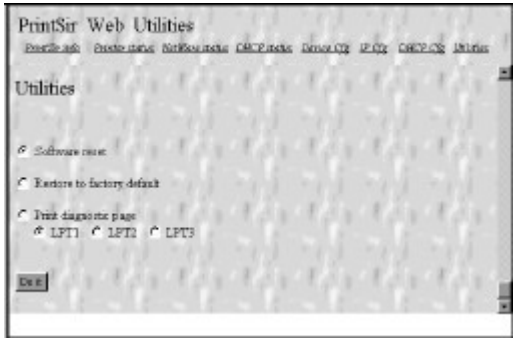
- The *Save to PrintSir* button: save the configuration to the PrintSir.

The PrintSir will verify your password (it will ignore the User Name item) when you save the configuration. The Security check page is shown in the ***Changing Device Configuration*** section on page ***74***.

Make sure to reset the PrintSir (described in the latter section) to have the changes take effect.

Using Utilities

You can perform several tasks from this Utilities page, as described as below:



- The *Software reset*: which determines if to reset the PrintSir.
- The *Restore to factory default*: which determines if to erase all of the PrintSir's setting and restore to the default configuration the PrintSir had when it was shipped from the factory.
- The *Print diagnostic page*: which determines if to print a diagnostic page to a attached printer connected at either LPT1, LPT2 or LPT3 of the PrintSir. This feature can be used to test the PrintSir to make sure it is operating properly, or to isolate any installation problems.
- The *Do it* button: do the action specified in the above.

The PrintSir will verify your password (it will ignore the User Name item) when you do the action. The Security check page is shown in the ***Changing Device Configuration*** section on page ***74***.

Part VII
Configuring the PrintSir

Using PSETUP

The PSETUP program included on the software diskette can be used for setup and maintenance tasks. Unlike the INSTALL program explained in the *Using the PrintSir with NetWare 3.x Networks* and *Using the PrintSir with NetWare 4.x Networks* chapters, PSETUP only handles the configuration of the PrintSir itself, and not the associated file server. PSETUP can be used in conjunction with NetWare configuration programs such as PCONSOLE to set up the PrintSir for network printing. PSETUP can also be used to setup the configuration for TCP/IP network. You must load *IPX/SPX network protocol* and *Gateway (and Client) Service for NetWare* on the workstation before running the PSETUP program.

To start the PSETUP program:

1. Insert the floppy disk and change to the appropriate drive (A: or B), or copy the contents to your hard disk.
2. Run the PSETUP program.
3. Choose your PrintSir from the displayed list, and press *Enter*. The displayed name should correspond to the name printed on the PrintSir, provided you have not assigned it an alias name (described below).

Once you have selected a PrintSir from the list, the PSETUP program will display its main menu, as shown below.

Changing the NetWare Configuration

The *NetWare Configuration* menu item allows you to set:

- The printing mode, which determines the PrintSir's service mode between print Server mode and Remote Printer mode.
- The alias name, an alternate name by which the PrintSir can be called (in addition to the PS*xxxxx* name printed on the label).
- The file server where the print queue is located, or the print server's NDS tree and context.
- The polling interval, which determines how often the PrintSir checks the print queues.
- Whether or not a diagnostic printout should be printed on the printer to which the PrintSir is connected.
- The print server, which will be serviced by the PrintSir that is being configured as a remote printer.
- The printer number, which is assigned in *PCONSOLE*.

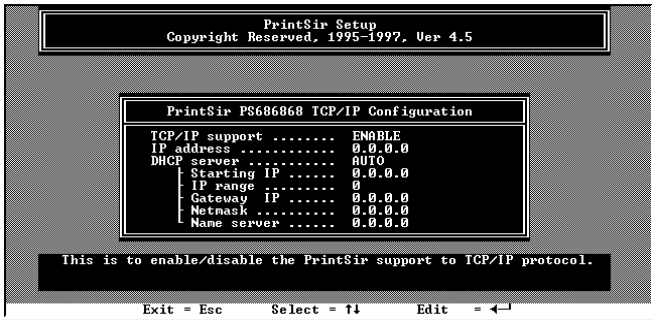
To change an item, use the up and down arrows to select it and press *Enter*. Press *Escape* to exit the menu.

PrintSir Setup
Copyright Reserved. 1995-1997. Ver 4.4
PrintSir PS100115 Configuration
Printing mode ..... Print server
Alias name PS100115
NDS tree .....
NDS context .....
Primary file server ... RD_SERVER
Polling interval 2
Diagnostic printout ... DISABLE
This is to allow the PrintSir to operate in either NetWare print server or remote printer mode. If you are not familiar with remote printer, we suggest you use the default "print server" mode.
Exit = Esc
Select = ↑↓
Edit = ↵

Make sure that you reset the PrintSir (by using the Reset PrintSir menu selection as described below) to make these changes go into effect.

Changing TCP/IP Configuration

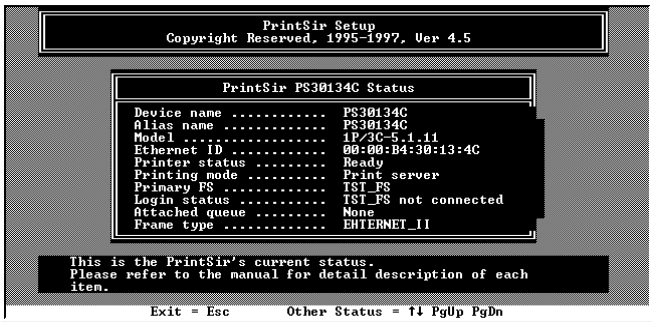
The *TCP/IP Configuration* menu item allows you to set:


PrintSir Setup
Copyright Reserved, 1995-1997, Ver 4.5
PrintSir PS686868 TCP/IP Configuration
TCP/IP support ..... ENABLE
IP address 0.0.0.0
DHCP server ..... AUTO
Starting IP 0.0.0.0
IP range 0
Gateway IP 0.0.0.0
Netmask 0.0.0.0
Name server 0.0.0.0
This is to enable/disable the PrintSir support to TCP/IP protocol.
Exit = Esc
Select = ↑↓
Edit =

- TCP/IP Support: determines whether or not TCP/IP network printing is supported.
- IP Address: gives the IP address where the PrintSir is to be located. The PrintSir will obtain its IP address automatically if its IP address is configured as Auto (0.0.0.0).
- DHCP server: determines if the PrintSir will act as DHCP server. If this item is set to Auto, the PrintSir will detect if there is any DHCP server on the network when it boots up. If there is no DHCP server on the network, then the PrintSir will configure itself as DHCP server; otherwise it will disable this function.
- Starting IP: specifies the starting IP address for assigning to DHCP clients.
- IP range: specifies how many IP addresses are available to DHCP clients.
- Gateway IP: gives the IP address of the default gateway.
- Netmask: gives the network mask.
- Name server: gives the IP address of the domain name server.

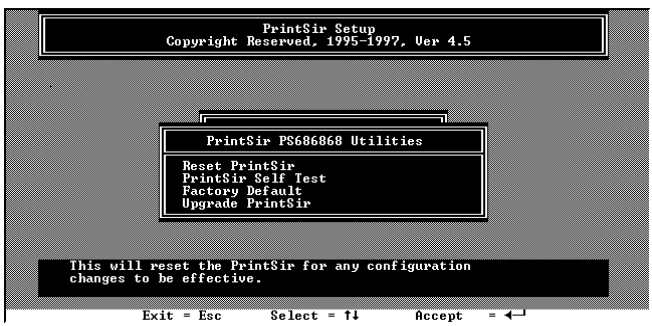
Get PrintSir Status

The *PrintSir Status* menu item can be used to display the status of the PrintSir in detail.


PrintSir Setup
Copyright Reserved, 1995-1997, Ver 4.5
PrintSir PS30134C Status
Device name PS30134C
Alias name PS30134C
Model 1P/3C-5.1.11
Ethernet ID 00:00:B4:30:13:4C
Printer status ..... Ready
Printing mode ..... Print server
Primary FS ..... TST_FS
Login status ..... TST_FS not connected
Attached queue ..... None
Frame type ..... EHTERNET_II
This is the PrintSir's current status.
Please refer to the manual for detail description of each item.
Exit = Esc
Other Status = ↑↓ PgUp PgDn

PSETUP Utilities

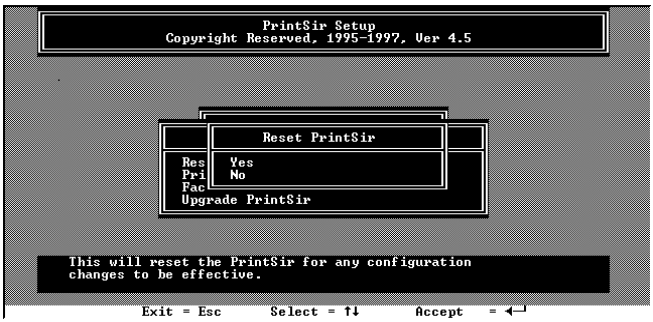
You can perform several tasks from the *PrintSir Utilities* menu, as described below.



Resetting the PrintSir

To reset the PrintSir, choose the *Reset PrintSir* selection, and choose *Yes* to confirm the reset. This operation is equivalent to turning the PrintSir off and back on again.

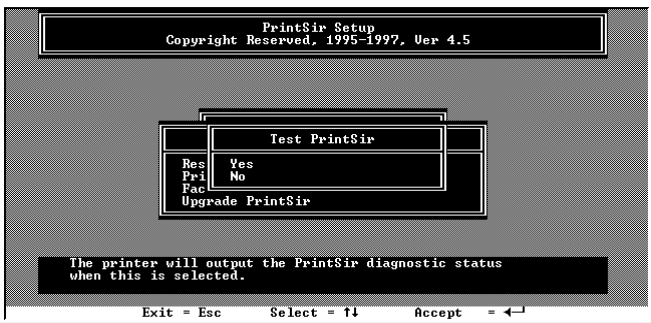
Resetting is necessary when you change the settings of the PrintSir, change the print queue settings of the file server, or perform a *Reset to Factory Defaults*.



Printing a Self-Test Page

The PrintSir can be instructed to print a Diagnostic Report showing its current settings on the printer to which it is attached. This feature can be used to test the PrintSir to make sure it is operating properly, or to isolate any installation problems.

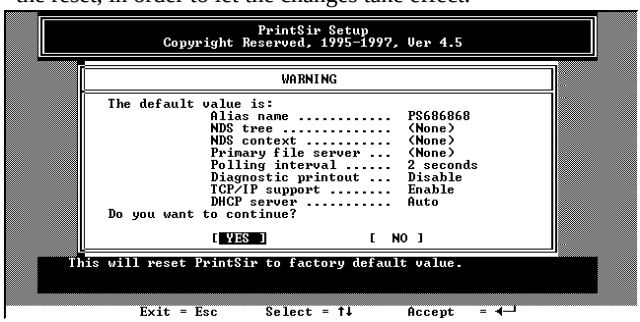
To perform a self-test, select *PrintSir Self Test*, and choose *Yes* to confirm that you wish to test the PrintSir. The printer should print a PrintSir Diagnostics Report showing the device settings and status.



Resetting the PrintSir to its Factory Defaults

If you wish to erase all of the PrintSir's settings and restore them to the default settings the PrintSir had when it was shipped from the factory,

1. Choose *Factory Default* from the *PrintSir Utilities* menu.
2. The PSETUP program will display the new default values and ask for confirmation. Choose *Yes* to confirm.
3. Choose the *Reset PrintSir* selection, and choose *Yes* to confirm the reset, in order to let the changes take effect.


PrintSir Setup
Copyright Reserved, 1995-1997, Ver 4.5
WARNING
The default value is:
Alias name PS686868
NDS tree ..... (None)
NDS context ..... (None)
Primary file server ... (None)
Polling interval ..... 2 seconds
Diagnostic printout ... Disable
TCP/IP support ..... Enable
DHCP server ..... Auto
Do you want to continue?
[YES] [NO]
This will reset PrintSir to factory default value.
Exit = Esc
Select = ↑↓
Accept = ↵

Upgrading the PrintSir's Flash Memory

The PrintSir stores its internal programs in "flash" memory, which you can upgrade when new versions of the PrintSir's software become available. (Contact your dealer for information about software upgrades.) To perform an upgrade,

1. Make sure the updated PSROM.BIN (or PSMOROM.BIN or PS3PROM.BIN; depending on your model) file is stored in the same directory as the PSETUP.EXE program (for example, in the installation disk).
2. Choose the *Upgrade PrintSir* menu selection.
3. Choose *Yes* to confirm the upgrade.
4. The PSETUP program will show a progress bar graph to show how far along the upgrade has gone. The yellow Status LED on the PrintSir should be lit continuously.
5. When the upgrade is complete, you can begin using your PrintSir.

Using PrintSir Configuration for Windows 95/98/NT

The *PrintSir Configuration for Windows 95/98/NT* program included on the diskette can be used for setup and maintenance tasks. The *PrintSir Configuration for Windows 95/98/NT* program, just like PSETUP, only handles the configuration of the PrintSir itself, and not the associated file server. The *PrintSir Configuration for Windows 95/98/NT* program can be used in conjunction with NetWare configuration programs such as PCONSOLE to set up the PrintSir for network printing. The *PrintSir Configuration for Windows 95/98/NT* program can also be used to setup the configuration for TCP/IP network. Unlike the INSTALL and PSETUP programs are for DOS environment, the *PrintSir Configuration for Windows 95/98/NT* program is truly 32-bits program for Windows. You must load either *IPX/SPX* or *TCP/IP network protocol* on the workstation before running the *PrintSir Configuration for Windows 95/98/NT* program.

Installing PrintSir Configuration Program

You will need to perform the tasks below to install the *PrintSir Configuration for Windows 95/98/NT* on *Windows 95/98* or Windows NT:

1. Run Setup from the *PrintSir Configuration for Windows 95/98/NT* diskette shipped with the PrintSir.

2. Click *Next* button to begin installation.

3. Specify the *Destination Folder* and click *Next* button.

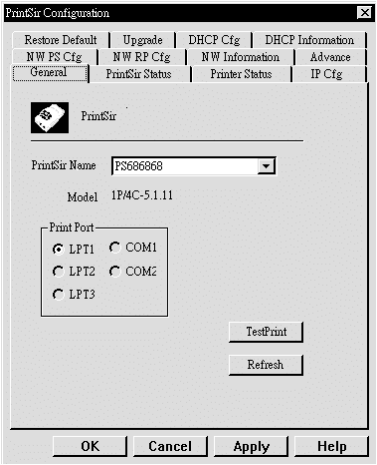
4. Specify the *Program Folder* and click *Next* button.

5. The installation program will copy all necessary files to your workstation and show a progress bar graph, then create a program folder.

6. When the installation is complete, you can begin using the *PrintSir Configuration for Windows 95/98/NT* program.

Starting PrintSir Configuration Program

Double click the icon of PrintSir Configuration in PrintSir Utility program folder to run the *PrintSir Configuration for Windows 95/98/NT* program and the following picture will be displayed on the screen.



This program groups the configuration items into 12 pages as below:

- General: general information
- PrintSir Status: current PrintSir status
- Printer Status: current printer status
- IP Cfg: IP configuration
- NW PS Cfg: configuration for NetWare print server mode
- NW RP Cfg: configuration for NetWare remote printer mode
- NW Information: PrintSir connection information for NetWare
- Advance: enable TCP/IP and/or diagnostic printout
- Restore Default: reset the configuration to factory default
- Upgrade: upgrade the PrintSir firmware
- DHCP Cfg: configure DHCP parameters
- DHCP Information: current DHCP server status and information

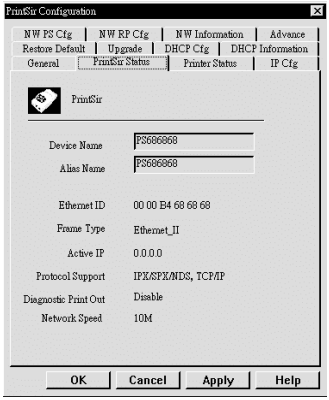
Getting General Information

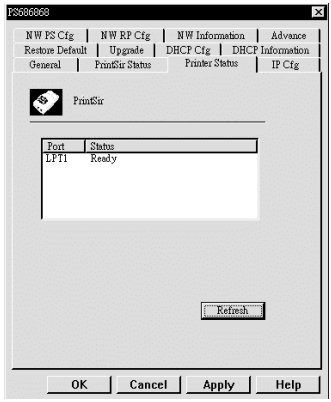
Each time you run the *PrintSir Configuration for Windows 95/98/NT* program, the program will locate PrintSirs currently available on the network using either IPX or IP protocol. It will take several seconds to locate PrintSirs from the network. The first page you see will be the "General" page. You MUST choose your PrintSir from *PrintSir Name* displayed list before changing any configuration or getting any status of a PrintSir.

- Choose your PrintSir from the *PrintSir Name* displayed list. The displayed name should correspond to the Device Name printed on the PrintSir, provided you have not assigned it an alias name.
- You may want to get more recently active PrintSirs by pressing "*Refresh*" button.
- *Model* specifies the model number of the PrintSir.
- To print a test page, you will have to select a printer port first, then press "*TestPrint*" button.

Getting PrintSir Status

The *PrintSir Status* page can be used to display the status of the PrintSir in detail.



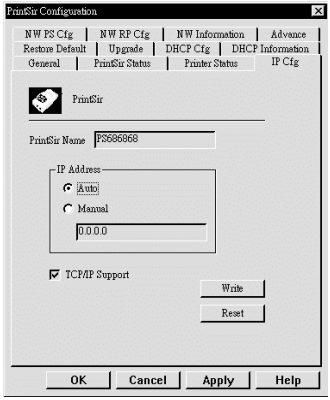


Getting Printer Status

The *Printer Status* page can be used to display the printer status for each port.

Changing IP Address

The *IP Cfg* page allows you to configure the IP address where the PrintSir is to be located. The PrintSir will obtain its IP address automatically if you configure the IP address as *Auto*. Click *Write* button to save the configuration to the PrintSir and Click *Reset* button to reset the PrintSir and have the changes take effect.

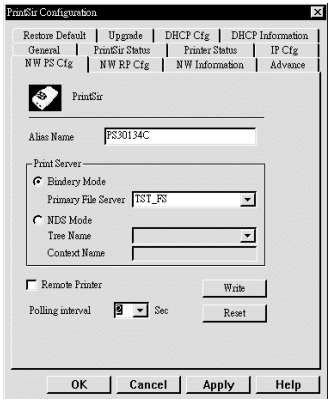


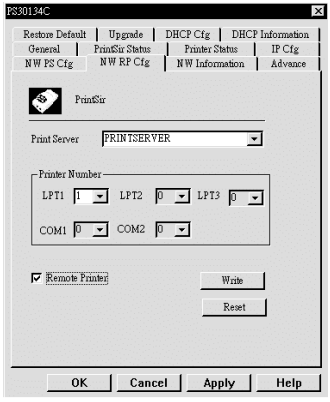
Changing the NetWare Configuration for Print Server Mode

The *NW PS Cfg* page allows you to set:

- The Alias name, a nickname by which the PrintSir can be called (in addition to the PSxxxxxx name printed on the label).
- The operation mode, which determines how the PrintSir logins to the network between Bindery mode and NDS mode.
- The file server where the NetWare print server object is located, or the print server's NDS tree and context.

- The remote printer, which determines if the PrintSir works at remote printer mode.
- The polling interval, which determines how often the PrintSir checks the print queues.
- The *Write* button: save the configuration to the PrintSir.
- The *Reset* button: reset the PrintSir to let the changes take effect.





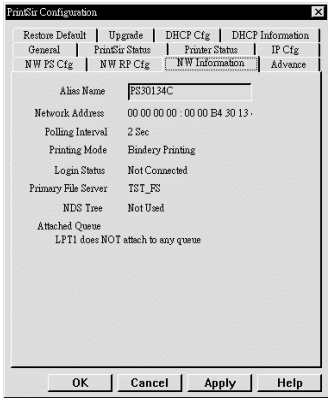
Changing the NetWare Configuration for Remote Printer Mode

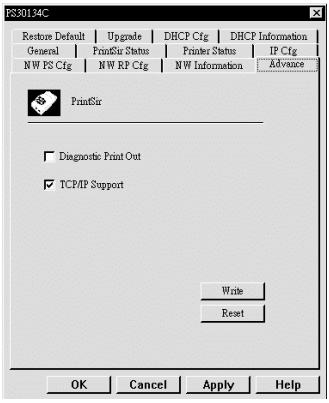
The *NW RP Cfg* page allows you to set:

- The Print Server, which will be serviced by the PrintSir configured as a remote printer.
- The Printer Number, which is assigned in *PCONSOLE*.
- The remote printer, which determines if the PrintSir works at remote printer mode.
- The *Write* button: save the configuration to the PrintSir.
- The *Reset* button: reset the PrintSir to let the changes take effect.

Getting PrintSir Information for NetWare

The *NW Information* page can be used to display the PrintSir connection information for NetWare.





Changing the Advance Configuration

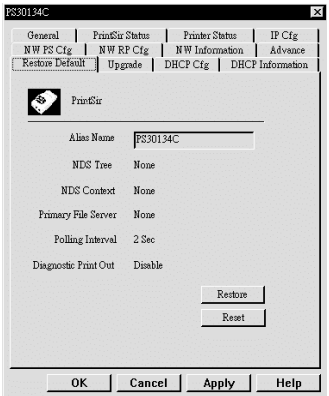
The *Advance* page allows you to set:

- The Diagnostic Printout, which determines whether or not a diagnostic printout should be printed on the printer to which the PrintSir is connected.
- The TCP/IP Support, which determines whether or not TCP/IP network printing is supported
- The *Write* button: save the configuration to the PrintSir.
- The *Reset* button: reset the PrintSir to let the changes take effect.

Resetting the PrintSir to its Factory Defaults

The *Restore Default* page allows you to erase all of the PrintSir's settings and restore them to the default settings the PrintSir had when it was shipped from the factory.

- The *Restore* button: save the default configuration displayed in this page to the PrintSir.
- The *Reset* button: reset the PrintSir to let the changes take effect.



Upgrading the PrintSir's Flash Memory

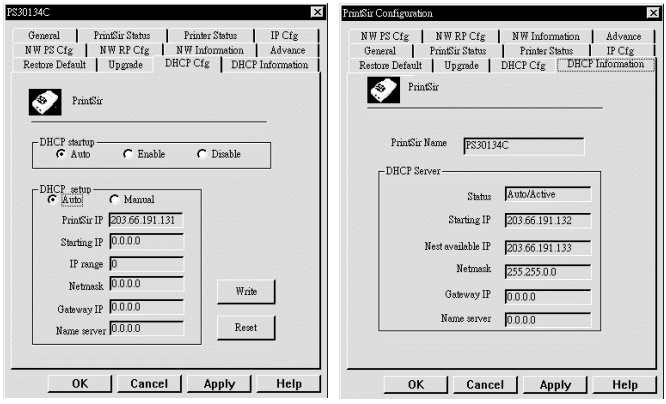
The PrintSir stores its internal programs in "flash" memory, which you can upgrade when new versions of the PrintSir's software become available. (Contact your dealer for information about software upgrades.) To perform an upgrade,

- Make sure the updated PSROM.BIN (or PSMOROM.BIN or PS3PROM.BIN; depending on your model) file is stored in your computer.
- Choose the updated firmware in *File Name* field.
- Click *Upgrade* button to upgrade the PrintSir's flash memory. The yellow Status LED on the PrintSir should be lit continuously.

Configuring DHCP Parameters

The PrintSir can be configured as DHCP server to provide dynamic IP addresses assignment. The *DHCP Cfg* page allows you to set:

- The DHCP startup, which determine if the PrintSir will act as DHCP server. If this item is set to Auto, the PrintSir will detect if there is any DHCP server on the network when it boots up. If there is no DHCP server on the network, then the PrintSir will configure itself as DHCP server; otherwise it will disable this function.
- DHCP setup is used to configure TCP/IP parameters that will be assigned to a DHCP client. If this item is set to Auto, the PrintSir will determine all TCP/IP parameters automatically; otherwise you will configure the following parameters:
  - IP Address: specifies the IP address of PrintSir itself.
  - Starting IP: specifies the starting IP address for assigning to DHCP clients.
  - IP range: specifies how many IP addresses are available to DHCP clients.
  - Gateway IP: gives the IP address of the default gateway.
  - Netmask: gives the network mask.
  - Name server: gives the IP address of the domain name server.
- The *Write* button: save the configuration to the PrintSir.
- The *Reset* button: reset the PrintSir to let the changes take effect.



Getting DHCP Server information

The *DHCP Information* page can be used to display the DHCP server information when the PrintSir is with DHCP server function.

- The status: displays if the PrintSir acts as DHCP server or not.
- Starting IP: displays the starting IP address for assigning to DHCP clients.
- Next available IP: displays the next available IP address that can be assigned to a DHCP client.
- Gateway IP: displays the configured IP address of the default gateway.
- Netmask: displays the configured network mask.
- Name server: displays the configured IP address of the domain name server.

Appendices

Troubleshooting

Quick Installation Guide

In order to ease the installation and configuration efforts, we provide the quick installation guide for various environments such as NetWare, UNIX, Windows 95/98 and Windows NT. The quick installation guide, named QGUIDE.HTM, is placed in the first diskette (PrintSir Utilities for DOS) provided with the PrintSir.

Technical Support

In order to help you solve the installation and configuration problem in time, we provide the Frequently Asked Questions, named FAQ_PS.HTM, in the first diskette (PrintSir Utilities for DOS) shipped with the PrintSir. In case of any problem on installation and configuration, you may find the solution from the Frequently Asked Questions. In case you can not find the solution from the FAQ, please fill in the technical support form in the first diskette and contact your dealer for service assistance.